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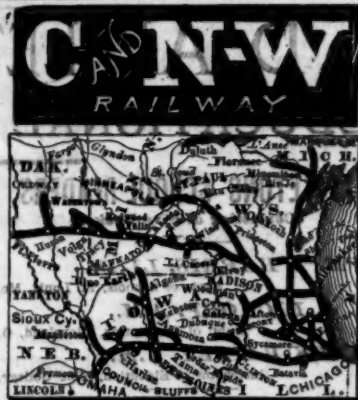
**SAHARA.**—Recently Dr. Lenz, who has just returned from an expedition across the Sahara desert to Timbuctoo, gave a lecture before the Paris geographical society. Dr. Lenz decisively condemns as impracticable the project of flooding the Sahara. The fresh water fossils, which are met with in many parts, show that the Sahara is not the bottom of a dried up sea. The temperature is not nearly so hot as might be expected, wild beasts are rare and the most formidable enemies to be met with are the Touareg tribes, who, according to report, have recently massacred the French Trans-Saharan expedition. On the whole the impression is conveyed that the Sahara is not half as black as it has been painted and that it is entitled to an apology from the entire civilized world.

**SLEIGH BELLS—HOW MADE.**—It has no doubt been a mystery to many how the iron ball inside of sleigh bells got there, and it is said to have taken considerable thought on the part of the discoverer—before the idea struck him. In making sleigh bells the iron ball is put inside a sand core, just the shape of the inside of the bell. Then a mould is made just the shape of the outside of the bell. This sand core, with the jacket inside, is placed in the mould of the outside and the melted metal is poured in, which fills up the space between the core and mould. The hot metal burns the core so that it can be all shaken out, leaving the ball within the shell. Bell valves, swivel joints and many other articles are cast in the same manner.

**THE HORSE POWER OF THE WORLD.**—It has been estimated that in 1878 on the 270,000 miles of railroad there were at work 105,000 locomotives, of an aggregate 30,000,000 horse power, while the total number of engines amounted to 46,000,000 horse power. Taking the nominal horse power at an effective force equal to that of seven men it will be seen that the steam engines represent the force of nearly one thousand million men, which is more than double the amount of workers on the face of the globe. The steam engine, which is fed by coal, has therefore tripled the productive power of man. —Scientific American.

Two children were presented to a West Troy clergyman, as candidates for infant baptism. One, a little girl, was asked if she had ever been baptized before. "Yes," was the answer, "and mine took, but Charlie's didn't." Charlie thought that the laugh that followed was at his expense, and stoutly asserted that if the merriment did not cease, he would not allow himself to be "vaccinated" at all.

A little miss has an uncle who has taught her to open and shut his crushed hat. The other day, however, he came with an ordinary silk one. Suddenly he sees the child coming with the new stove-pipe wrinkled like an accordion. "O Uncle Dick," she says, "this one is very hard. I've had to sit on it, but I can't get it more than half shut."



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# The School Journal.

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## THE SCHOOL JOURNAL.

A Weekly Journal of Education.

AMOS M. KELLOGG, Editor.

E. L. KELLOGG & CO., Educational Publishers,

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New York, June 4, 1881.

### Keep us Posted.

Let every reader of this paper send us word of the time when will occur either the Institute, the County Associations, the Town Association, or the time for Examination. Keep us posted. Some attend to this matter, others "let it slide." Send us papers containing educational news. And generally be on the alert. Be in all senses a *live* teacher. Let every reader be sure and tell us of the time and place of holding every town, city, county, or state association that he may know of. If it is an institute tell us the name of the conductor and any other facts. It is time that EDUCATIONAL facts were known and published.

AN artist was asked which was his best work. He replied, "The next one I make." Such should be the feeling of the teachers—"To-morrow shall be better than to-day."

When he gets his school so that it "runs," and then he only needs to come and ring the bell and go through a set routine—he should in mercy to the children pack his trunk and seek other business. Teaching is over there.

ROSCOE CONKLING and Thomas C. Platt, Senators from this State, resigned their places. They complain of President Garfield and desire to be re-elected, to show him that their State is with them. The balloting for their successors is now taking place. There is a great political struggle going on between the supporters of the ex-Senators and the Administration supporters.

By the death of Prof. Alexander J. Schem, the City of New York has lost an able and devoted superintendent of its schools. He had been in his post as an assistant long enough to show his devotion to the interests of the scholars. The pupils loved Mr. Schem, and well they might, for he loved them. His kind disposition endeared him to all who knew him. He retained his overflowing good humor as long as he was conscious, and thus his friends were deceived as to his real condition. In Mr. Schem we feel we have endured a personal loss. At every occasion on meeting the editor has he congratulated him on the solid worth of the JOURNAL, and tendered his services to translate from the German periodicals for it. Knowing how heavily he was loaded with work, his offer was never accepted, but his appreciative and his co-operative spirit will be long remembered.

I AM glad to tell that, out of all the toil and disappointments of the summer just ended, I have risen up to a victory; that silence of thought since you have been away has won for my spirit a triumph. I read something like this the other day; "There is no healthy thought without labor, and thought makes the labor happy." Perhaps this is the way I have been able to climb up higher. It came to me one morning when I was making bread. I said to myself, "Here I am, compelled by an inevitable necessity, to make bread this summer. Why not consider it a pleasant occupation, and make it so by trying to see what perfect bread I can make?" It seemed like an inspiration—and the whole of life flowing down through my spirit into the white loaves; and now I believe my table is furnished with better bread than ever before—and this truth, old as creation, seems just now to have become fully mine, that I need not be the shirking slave to toil, but its regal master, making whatever I do yield me its best fruits. You have been king of your work so long that maybe you will laugh at me for having lived so long without my crown, but I am too glad to have found it at all to be entirely disconcerted even by your meritment. Now, I wonder, if right here does not lie in the "terrible wrong," or at least some of it, of which the woman suffragists complain. The wrongly educated woman thinks her duties a disgrace, and frets under them, or shirks them if she can. She

sees man triumphantly pursuing his vocations, and thinks it is the kind of work he does which makes him grand and regnant; whereas it is not the kind of work at all, but the way in which and the spirit with which he does it.—MRS. GARFIELD.

### Not Uncommon.

Those who would give life to others must themselves have life. This is more true of the teacher than of any other laborer. Yet it is not an uncommon sight to see a man or woman "get a place," and then settle down into the dull and dead routine. They live only when out of school. Are these things so? Are the principals of academies, of union schools, of city grammar schools, and even of normal schools, to say nothing about colleges, without educational earnestness and enthusiasm? It must be admitted that the charge is true. The pity is that it is so true.

There is John Jones, for example. He has had charge of an academy for over twenty years. He never attends any educational meeting, never sees an educational journal, (except the samples sent by publishers who hope he will subscribe. Vain hope!) never reads educational books.

No, there is a limit to the amount you can draw out of any barrel. John Jones taught himself all out in less than a year after he took the principalship. He is like a certain teacher in this city. The boys in the class above his sympathizingly ask his pupils, "Has he told you the story about —?" In a short time they are asked, "Has he told you about — yet? This is about the time for that."

### Hard Shell Teachers.

On a late visit to Richmond it was found that one of its present attractions was the Rev. John Jasper, a colored clergyman. "Did you go to Mr. Jasper's church?" was asked. This wide-spread reputation was gained because he preached as follows: "They say de sun do not move. But do I not see him rise in the de east; then at dinner-time he is over head, and it is powerful warm; then at night he is way over in de west, behind de hills. Now, how could he do dat if he did not move? Therefore, I say de sun do move."

Now there are many teachers whose shell is even harder than his. They preach as follows: "They say the educational world moves, but I declare it stands still. I teach in the same old style, I know. I read no educational books; I attend no educational meetings; I subscribe to no educational journals especially. In fact, I know this point of the educational world is petrified."

But it does move nevertheless; there is hope that these "Hard Shells" will "step down and out," and let new men with new ideas come in. One of the New York Board of Education said: "Of all the people in this world the least progressive is a teacher who has got a place and thinks he is sure to hold it without further effort!"



## THE SCHOOL-ROOM.

For the SCHOOL JOURNAL.

## Occupation for Young Children in School.

By ANNA JOHNSON.

## VII. PRACTICAL ARITHMETIC.

Provide each child with a box of toy-money, which can be obtained from book or toy stores. Have the children learn the names of the different coins, if they do not already know them. Show the real money, and talk about the material of which it is made. Their previous lessons will enable them to tell something about it, and where obtained. Speak of the process of its manufacture into money. Tell them the name of the place where the coins are stamped. Call their attention to the impressions on each.

Ask them to lay out two pennies, then one piece of the same value; also five pennies, and one piece of the same value; and in this way find the value of all the coins to one dollar. Beans or stones may be substituted for pennies for the higher denominations. Then use two-cent pieces in connection with the pennies, then threes, fives, etc., making all conceivable combinations, until the children are thoroughly acquainted with their value, and can readily substitute the correct number of small coins for the larger ones.

Give the children easy practical examples to solve, using the money for example. If John goes to the store and buys two cents worth of candy, and gives a five-cent piece; how much change ought he to receive? If they cannot tell readily, let them lay out five pennies and take two away. When they are able to solve the simplest examples readily, take more difficult ones, combining addition and subtraction, also multiplication and division. Whenever the children are puzzled, let them use the beans or blocks, and work it all out for themselves. It would be well to provide each child with a small bag of beans. The children should all work in concert, as they are all furnished with the materials. Call upon different ones to explain the examples. If any of the children are able, let them give questions to the class.

The weights and measures may be taught in a similar manner, by the use of the objects. Furnish each child with a foot rule, also slips of paper one inch in length. The teacher may have a yard stick. Tell them the length of the rules and the papers. Let them lay their slips of paper on their rules, and find out how many it takes to cover them. Lay the yard stick down, and let them place their rules on it to ascertain how many feet make a yard. Let them find the inch-marks on the rules, and on the yard stick, and count the number of inches in a yard. Have them fold their inch-slips in half, and find the half inch on their rules. Ask how many half inches in an inch. Let them fold their slips again and tell the number of parts; also find the length on their rules. Halve and quarter a number of different objects in the presence of the children so they may thoroughly comprehend that two halves and four quarters make a whole thing. The portion of the table that they have found may now be written upon the board and learned by the children. Let them name the things sold by this measure, and the kinds of stores that use it. Teach them to test length by the eye, beginning with the inch.

Weights may be taught by the use of scales. Let the children name some weights with which they are acquainted, and find them. Let them place a pound weight on the scales, and then find two weights that will exactly balance it, then four and eight weights. Let them discover for themselves the number of ounces in one pound, in one-half pound, etc. Let them weigh beans, buttons, pebbles, etc. Teach them to be exact. Test them by having them close their eyes, and placing different weights in their hands.

Liquid and dry measures may be taught by the use of the tin and wooden measures.

In this way the children are able to make their own tables, and retain the knowledge much better than when taught abstractly.

When these are learned, spare time or lesson time may be taken once a week or oftener in "playing store." Beans, pebbles, marbles, buttons, etc., may represent candy and groceries; narrow pieces of muslin or list will answer for dry goods. Certain ones may be appointed for the store keepers, cashiers and book-keepers. They may be taught to keep simple accounts, and, if old enough, to make out bills and receipts.

This play exercise is really practical business, and will teach them much more than they will acquire in thrice the time spent in the ordinary way. It will teach them to calculate and make change rapidly. When they are well acquainted with the business, they may be allowed to transact it without the teacher, simply having a monitor over them.

The more practical and less theoretical school-work can be made, the better will the children be fitted for their work in life. A little learned in a practical way will be of far greater value to them than much learned in an indefinite, hearsay way.

## The Kindergarten.

How are we to educate? In the little Swiss town of Burgdorf with its thatched cottages, dormer windows, and narrow streets that wind in and out and curve until they lead to the mountain passes, where the tinkle of the bell around the neck of the goat is mingled with the hoarse, discordant voice of the goatherd as he follows his charge with a rude cry; there, in that busy, thrifty town, many, many years ago, was established the first kindergarten by Friedrich Froebel. Kindergarten, the child garden, where education gives to the young human plant, the proper soil, causing the germ to burst its outer covering as the buds do in the spring time, grow and expand until the exquisite floweret of self-consciousness is the result, and all the talents and gifts of the child are developed in a natural manner.

Not alone the intellect does the kindergartener tend, but the three-fold nature of the child is duly cared for, the mind, the morals and the physical being. Neither one is neglected for the sake of the other, but to compare it with the old method of education, let us look for the results of instruction alone. Then we must go to the asylums, prisons and reformatories, which bear witness that not the ignorant only commit crimes, but education even aids men to do the deed more dexterously. Is not this then, a one-sided education? An education that takes into account the intellect alone, and not the moral nature of the child? Yet when we urge upon the community the necessity for establishing means to educate the young according to a better method, we are met with the objection of the expense.

Froebel did not think, in maturing this great life-work of his, of children alone as children, but looking forward through the long vista of years, he saw with prophetic eyes, the responsibilities that would be resting upon them, and the higher conditions which they, in fulfilling their calling, would be expected to meet. He saw that the greatest deeds of man were but the developed emotions of an infant's soul, and therefore, how important it is to educate the child from the cradle, so that the good in him may make its true mark, and the evil powers lying latent be directed into good channels, so that this evil, growing less and less, might be overcome to a great degree. Then he prepared his life work, not originated in his brain alone, but far back through the long lapse of centuries, we trace this thought for the development of the human race from infancy through ages of darkness, to the twilight of human barbarism, even to the time of the ancient Greeks, when the immortal Plato wrote in his utopian laws, the thought that Froebel has embodied, and this thought has been recurring at different epochs in the history of mankind, until Froebel, devoting his life to the needs of humanity in little children, discovered the secret of true education, which is to take the child at the time at which it is most impressionable, when it leaves its mother's arms and enters the school.

In this "garden" he has brought before them form, color, shape and sound, in their elementary simplicity, fitted to enter the soul life without rudely awakening it or forcing it precociously. From the ball, which is the simplest form in nature, he leads them slowly, step by step, through the long line of connected links, from the object to the picture, from the picture to the sign or word, from the sign to the idea or abstract thought, for little children should not be taught to reason before perception has been awakened.

Here in the kindergarten, the forces of nature are made subservient to the needs of childhood. They receive their first education from the world around them, not from a book, but they combine learning with doing in each stage of their development. The fingers are educated and made to carry out the designs which originate in their awakening intellects, the true bent of their peculiar individualities is discovered and given free activity.

When each child is educated so that under all circumstances he can give expression to his inner life, we shall have greater happiness, a purer morality, and a better state of society, and this is what the kindergarten claims to do, to recognize at the earliest possible stage, the latent gift or talent, and so work for its development, thus saving thousands of mis-steps in contrary directions, many tears, and, perhaps, many a lost genius, buried beneath a mistaken life-calling.

Walter Smith says the beginning of all art is in the kindergarten, and who shall say that it is not so? Wondrous is the modeling in clay done by such tiny fingers, and baby hands spread out before us the most curious designs formed of triangles, or with rings, elaborate and complete patterns for inlaid work, wall paper or carpets. Their eyes are quickened to observe, their fingers acquire skill to execute in various ways that seem an impossibility to those who have never had the training in a kindergarten.

The child is led of its own free will to choose the good and discard that which is evil. He feels in doing right that happiness which comes from good impressions. The basis of all moral culture lies in the plays of children, for here unselfishness is cultivated, and everything that is mean or low or dishonorable is banished. No thwarting of natural desires, no loud, authoritative, or dictatorial tones are heard within the walls of the kindergarten, but love and kindness with gentle firmness are the sunshine which ripen these fruits to perfection. The child in the kindergarten who is shown why he had not better do an action which is not right, by his own choice of the better plan rises into the realm of the higher morality, while the boy in the public schools, who is forbidden, is liable to choose secretly the wrong as soon as opportunity is afforded.

Then while these influences are moulding the moral character, the physical nature of the child is receiving that training which is needed, the plays which strengthen the muscles, and sharpen the senses; the ball games which bring health, quickness of motion and dexterity; the physical exercises which develop the limbs until they can serve as fit tools of the mind.—MARJORIE MARCH in *The Household*.

For the SCHOOL JOURNAL.

## Teaching Botany by Drawing.

By MRS. T. J. MITCHELL.

When we wish to become well acquainted with any foreign nation or strange tribe of people, we are not satisfied with knowing one or two individuals who visit us and become partially Angloized. We prefer visiting them in their own country, and, with the aid of an interpreter, learning their language, customs, manners and everything possible about them.

So in Nature's realm the inspection of a few individuals changed by cultivation is not enough. We want to go to their homes, and become acquainted with their families and habits. This is the true method of studying Botany. To roam through forest and woodland with an enthusiastic botanist for our interpreter; to call on the modest little blue and anemone; to take off our hats and bow in reverence to the mighty oak, "monarch of the wood;" to sit down on some mossy bank and with flowers all around us, show them by our gentle touch and respectful demeanor that our mission is a peaceful one; that we have no feeling for them but love and a desire for better acquaintance. We have no need of guide book or technical language. Our faithful teacher knows where they all live, and to our willing minds he interprets all that is useful and interesting concerning them.

Those of us, who have been fortunate enough to enjoy such instruction, feels that its value cannot be overestimated, that one study pursued with such success is a liberal education in itself. If we could transmit to our pupils a fractional part of the benefit and pleasure thus received, we would feel amply repaid for any extra exertion. But while we spent weeks and months of successive summers in such research, to our pupils we can only give a 40 minute lesson a day during a meagre term of ten or twelve weeks. This being the case, we must make the most of our time, and leave them with a text book in their hands prepared to proceed alone.

For this, not only is a knowledge of the plants handled necessary, but also ability to use with readiness and accuracy the technical terms employed by botanists.

This is considered the dry part of the study of Botany, and generally comes in March and April when we are unable to make it attractive with fresh flowers.



For three years I had the senior classes of a High School in Botany. The most successful year was the one in which I worked out the following plan.

I taught all the technical terms by *class blackboard drawing*. I have two large herbaria, one of leaves, and one of flowers, the result of sixteen years' study and work, and comprising nearly everything illustrated in the textbooks. These I kept constantly at hand for use. I had house-plants, fuchsias, primroses and geraniums in blossom, and I also had seeds (beans, peas, etc.) planted in crayon boxes, filled with rich earth, ready to be dug up to show plant growth. To make the terms *understood*, I had the pupils handle these appliances until they were perfectly familiar. To *impress* them, I had them drawn repeatedly on the board by each member of the class.

The first day their books had not come. At recess I drew a large quince leaf on the board, the outline and veins in white, the shading in green crayon. When the class assembled, I showed them some dried quince leaves pasted on drawing paper, and explained the different parts. The fuchsia leaves were similar and served for fresh experiment. I had one of the boys point out the different parts of the leaf on the board and the class name them in concert. Then I sent them all to the boards to copy that leaf in outline, which they soon did, some with considerable artistic skill. I had each one describe it and all its parts in his own language. When a pupil can draw an object, he can generally find words to describe it. In that lesson they learned how to use the terms *blade*, *petiole*, *stipule*, *venation*, *vein*, *veinlet*, *veinulet*, *base*, *apex*, *net-veined*, and *entire margin*.

The next day's lesson was to bring the same leaf drawn from memory on paper, with the parts labelled and described in their own language. I had ready on the board a leaf of iris, and plenty of dried specimens, among others, the large sword plant of Florida. They learned *linear*, *lanceolate* and *parallel venation* that day and drew both the iris and quince leaf. The next day their books arrived, and they were surprised to find how much they already knew. The first chapters were devoted to leaves, so their third lesson comprised several new forms. In preparing their lessons, I had them drawn the outlines on their slates before applying the terms of the definitions. They were then easy to understand and learn. In class I had them all drawn at once, giving each a different leaf. By the time I finished giving out, the first was ready to recite. Giving him another, I went round again. Thus each pupil got the benefit of the whole recitation. Sometimes all, and sometimes only part of the time was devoted to drawings, but always some of it. The old quince leaf fell to some one almost every day, for a term once learned was kept in constant use. For a leaf, I gave three terms which the pupil immediately wrote at the top of the board. One term for form, one for margin and one for venation. Thus, "*ovate, dentate, reticulate*," called for egg shape, dentate edge and net veins. "*Linear, entire, parallel*" called for linear form, parallel veins and entire edge.

They drew all the different leaves with the different margins and apices, all parts of the flower, perianth, pistils and stamens, showing ovaries superior and inferior very clearly. Venation and aestivation gave them no trouble. All the different roots and even the plant structure were faithfully reproduced. As they were closely marked, they were careful to be accurate, and with so much practice they soon drew rapidly. I had only outline drawing. There wasn't time to allow shading. After an examination, when the boards were covered with their work, a teacher, visiting from a High School in another city came in. I explained my method and she said "Why, I could never get my pupils to do that." I told her she could if she worked it up gradually from a small beginning.

When we commenced analysing, I felt paid for my trouble. There was no hesitation or stumbling over terms. They had drawn every shape, margin, apex, etc., so many times that they were at no loss for its name. I also had them draw a few of the first flowers analyzed. We had plenty of specimens and several good microscopes. Occasionally we got excused at recess in the afternoon and went to the woods. The first new flower was a signal to stop. I sat down with Wood's Class Book open, and the class around me, I asked the questions and they answered, making the analysis quick work. Then followed a familiar talk about it and "its sisters and its cousins and its aunts." Thus, pepper, not being discussed, I called their attention to Cruciferae,

telling them that nothing in that order would poison them, that mustard, radish, horse-radish, water cress, and cabbage were some of the most distinguished members of the family.

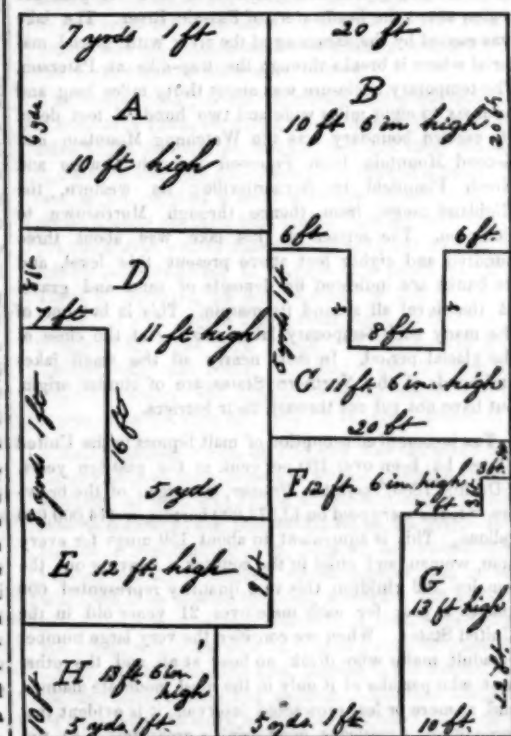
I got more work out of this class and taught them more Botany than any I ever had. For the limited time at present allowed in many of our schools, I think this a good plan.

But I think we already see the dawn of the day when this attractive subject will have its beginning in the lowest grade, when the chubby fingers of our little folks will be taught to pull their favorite "*daffy down-dillies*" to pieces to some purpose. Then the High School work will only be the crowning effort of a long and beautiful course.

FOR THE SCHOOL JOURNAL.

### Lessons in Numbers.

Let the teacher have the figure below drawn on the black-board; then let him give out the following questions:



26. How many bushels of wheat will room A contain? (2,150.4 cubic in. in a bushel.)
- 27-32. How many in B? in C? in D? in E? in F? in G?
33. How many gallons of water will room A contain? (231 cu. in. in a gallon.)
- 34-39. How many in B? in C? in D? in E? in F? in G?
40. How many rolls of paper will it take to cover the walls of room A, the walls to be 21 inches wide and 9 yards long, no allowance for doors or windows?
- 41-46. How many for room B? for C? for D? for E? for F? for G?
- 47-53. How much will the paper for room A cost, at 12½ cents per roll? for B? for C? for D? for E? for F? for G?
- 54-60. How yards of carpeting will be needed for room A, the carpet to be 27 inches wide? for B? for C? for D? for E? for F? for G?
- 61-67. What will the carpet cost for room A, at \$1.25 per yard? for B? for C? for D? for E? for F? for G?
68. Which room requires the most carpets? Which next? Arrange them in the order of the carpet they require.
- 69-75. How much will the border, ½ yard wide, for a carpet for room A cost, at \$1.75 per yard? for room B? for C? for D? for E? for F? for G?

Mr. Alexander Adams, of the English Postal Telegraph staff, announces that he has discovered well-marked *electric tides* in the telegraph circuits. He finds, that is, distinct and systematic variations of strength in the earth currents, which are invariably present on telegraph lines; and these variations follow the position of the moon with respect to the earth. Something of the sort has long been theoretically anticipated from the known effects of the moon upon the magnetic elements of the earth, but Mr. Adams is the first to bring it to observation.

### Questions.

By R. K. BUEHLE.

NO. I.—THEORY OF TEACHING.

1. Why is study the pupil's most important employment?
2. State five principles by which the propriety of the different incentives to study may be tested.
3. Name five proper incentives to study, and give your reasons for considering them so.
4. State the advantages of imparting knowledge by lectures.
5. Name five objects of the recitation.
6. Give the order in which the mind distinguishes objects in acquiring knowledge.
7. State the four methods of teaching which the relations of the object matter of knowledge condition.
8. Mention what faculties of the mind are called into exercises by the study of arithmetic.
9. What exercises are particular to be recommended as suitable to improve the memory?
10. Which precedes in the natural order, the abstract or the concrete; words or things; facts or principles?

#### READING.

"How charming is divine philosophy!

Not harsh and crabbed, as dull fools suppose,

But musical, as is Apollo's lute,

And a perpetual feast of nectared sweets,

Where no crude surfeit reigns."

1. Mark emphatic words.
2. Mark the clauses that should be slurred.
3. Name the quality of voice, the pitch, and the rate that should be used in reading the above extract.
4. What are the characteristics of good reading?
5. What is meant by calling philosophy divine, charming? What rhetorical figure in the first two lines. Who are meant by dull fools? Apollo? What is meant by nectared sweets? What is the name and use of the marks before *how* and *after* reigns?

#### HISTORY U. S.

1. Who were the Puritans, the Quakers, the Tories, the Huguenots, the Federalists?
2. Name the 13 original States in the order of their settlement.
3. Which of the Vice-Presidents were made Presidents?
4. What territory was acquired since 1776, when, and from whom?
5. What was the Declaration of Independence, the Omnibus Bill, and the Emancipation Proclamation?

#### ARITHMETIC.

1. Mary Jones bought 5 yards of dress goods, at 25 cts.; 1½ yds. of drilling, at 15 cts.; 3 yds. of cambric muslin, at 12 cts.; 2 spools of silk, at 20 cts.; 1 spool of cotton, at 5 cts.; 1 doz. buttons, at 25 cts.; write the bill in proper form to show that it is paid, and calculate the amount.
2. Subtract ¾ from ⅔, and give your reason for reducing to a common denomination, also the principle of fractions involved in the process of reduction.
3. If 4 men require 9 days to do a certain work, how long will it take 5 men to do half the work? Solve this question by two methods.
4. What will it cost, at 7 cts. per cubic yd., to dig a cellar 34 ft. 6 in. long, 28 ft. 9 in. wide, and 8 ft. deep?
5. Suppose the distance on Duke street from the Farmer's Bank to Vine street is 450 ft., and from corner of Duke and Vine to St. Mary's Church is 960 ft., what fraction of a mile is it in a straight line from the Farmer's Bank to St. Mary's Church?

#### MENTAL ARITHMETIC.

1. If 3 yds. of tape cost 11 cents, what will ¾ of a yd. cost?
2. If ¾ of a yd. of ribbon cost 16 cts., what will 3 yds. cost?
3. A man gained 7½% by selling a hat for \$3, what was the cost and the gain?
4. Mary can trim 1 hat in a day, Sarah 2, and Jennie 3, how long will it take them together to trim a hat?
5. What is the amount of \$100 for 1 year 5 months and 8 days, at 3½%?

#### WRITING.

1. Write a letter to me in proper form, briefly describing your method of conducting an exercise in penmanship, and the ways and means you would use in order to overcome any three of the usual difficulties.
2. What is the unit of measure in height for small letters?
3. Name and describe the principal movements.



4. Analyze a, h, u, F, H.
5. What are three characteristics of good writing?

## ORTHOGRAPHY.

1. Write three simple words, and 3 compound words.
2. Write 3 primitive words and from them form 3 derivative.
3. Classify words according to the number of syllables of which they are composed.
4. What is the next to the last syllable of a word called?
5. Write a list of vowels, liquids, labials, nasals.

## GEOGRAPHY.

1. Give 3 causes producing variation in the length of day and night.
2. Name the 3 most important exports from our country, and the States especially noted for each.
3. Name and locate a seaport in each of the 6 grand divisions, and state what forms its chief articles of export.
4. Name and locate 3 cities, not capitals, on rivers in Europe, and state for what each of them is noted.
5. What particular subjects and facts could you teach with a globe?

## GRAMMAR.

"Oh, many a shaft at random sent,  
Finds marks the archer little meant;  
And many a word at random spoken  
May soothe or wound a heart that's broken."

1. What kind of a sentence is this stanza?
2. Analyze the second clause.
3. Parse the words underscored.
4. Scan the stanza, naming the foot and metre.
5. Correct if wrong, "I says," "I done it," "Is that her?" "Conkling is the man whom they say resigned," "He lies on the lounge."

## Moral Lessons.

**KINDNESS REWARDED.**—During the trials of the late civil war between the States a federal soldier who was wounded was left by the roadside. He was hungry, thirsty and sick. While lying there almost dying of hunger and thirst a Confederate passed that way. The wounded man asked him for a drink of water which he gave him and then bound up his wounds. They separated. The Confederate soldier went on his way. The Federal soldier got well and went home. They heard nothing of each other for years. Recently the federal soldier died and bequeathed twenty thousand dollars to the man who bound up his wounds and gave him a drink of water.

This is but an example among thousands, in which the reward comes in this life; while in the life to come all are rewarded more than a hundred fold. Nothing else will bring us so great an income as kindness; or yield us so much for the amount of capital invested. A word of kindness is a seed which, when dropped by chance, springs up a flower. A kind word and pleasant voice are gifts easy to give; but liberal with them: they are worth more than money. Every kind word spoken, every kind look given and every kind act performed make each a strong link in the chain that binds us to our fellow beings. Kindness bestowed upon others soon becomes an inexhaustible fund from which we may draw each day and not consume the interest.

**INDUSTRY.**—Some boys spend their time in fishing, hunting and other sports. These years amount to enough time to procure for them a good education. Some boys whose parents have been so kind as to send them to school will idle away their time, come up with bad lessons, and have their teachers to remind them of their duty, and probably go home at night speaking evil of their teachers. If we spend our time in idleness, we not only deprive ourselves of many of the comforts of life, but we also rob ourselves of that time that God has given us for the preparation of our minds to make us useful and render our lives happy, which we should consider the most precious of all gifts.

A boy in a factory used to carry a book in his pocket, and at every opportunity read in it. The proprietor looked over his shoulder and saw it was a *Illustrous Discoverers*. He became interested in the boy and had him go to the night school, and in time he became the general manager.

**BROOKLYN.**—The fifth annual excursion took place Saturday, May 28, and was a very enjoyable affair. Glen Island was the objective point. The steamer *Thomas Collier* was selected and many teachers were present.

## Things to Tell the Scholars.

(PREPARED FOR THE N. Y. SCHOOL JOURNAL)

**DR. HENRY DRAPER** has carried his photography of the nebula of Orion far beyond his first successes. A picture obtained last March not only shows the nebula finely, but also stars of the fifteenth magnitude, so small that only a keen eye would be able to see them at all with an instrument of the same size as that with which the photograph was made.

The Monetary Conference in Paris is quite likely, from all appearance, to prove a failure. The question seems a very simple one, namely, to make a silver dollar heavy enough to equalize its value with that of the standard gold dollar. It appears that for twenty years probably silver will stand in worth to gold as 15.5 to 1; and it therefore recommends an international law that will fix this standard. But England does not want this for one reason, and Austria or Italy or France for another, and thus we shall still hobble on.

**Geo. H. Cook**, state geologist of New Jersey, describes an interesting glacial lake which for a time occupied the region about the headwaters of Passaic River. The lake was caused by the damming of the river with glacial material where it breaks through the trap-dike at Paterson. The temporary enclosure was about thirty miles long and from six to eight miles wide and two hundred feet deep. Its eastern boundary was the Watchung Mountain and Second Mountain, from Paterson through Orange and North Plainfield to Bernardsville; its western, the Highland range, from thence through Morristown to Pompton. The surface of this lake was about three hundred and eighty feet above present tide level, and its banks are indicated by deposits of sand and gravel at that level all around its margin. This is but one of the many such temporary lakes existing at the close of the glacial period. In fact, nearly all the small lakes and ponds of the Northern States are of similar origin, but have not yet cut through their barriers.

The increased consumption of malt liquors in the United States has been over 100 per cent. in the past ten years. "During 1889," says the *Retailer*, the organ of the brewers, "taxes were paid on 13,374,000 barrels, or 414,000,000 gallons. This is equivalent to about 150 mugs for every man, woman, and child in the country. Leaving out the females and children, this vast quantity represented 600 glasses a year for each male over 21 years old in the United States. When we consider the very large number of adult males who drink no beer at all, and the other host who partake of it only in the most moderate manner, and at more or less protracted intervals, it is evident that some other Americans must drink a great deal. At five cents a glass, this beer manufacture of 1890 brought \$375,000,000, or about \$7.50 per capita for every man, woman, and child. This is a quarter more than the total expense of running the United States Government." It is no longer proper, in view of these statistics, to speak of the Germans as "beer drinkers." It would be more appropriate to speak of the "American beer drinkers."

**THE STAR ROUTES.**—The so-called "star-routes" are stage lines in the West over which the mails are carried. There are 9,225 of them, and the appropriations for the service amount to nearly \$6,000,000. Ninety-three of these routes seem to have been selected for corrupt operations. After the contracts for these were let, the service on them was "expedited," as it is called. That is, if the mails were to be carried once a week, for a moderate sum of money, the contractor would propose to run daily and receive a large sum of money. In this manner the ninety-three routes absorbed about one-half of the \$6,000,000, leaving only the other half for the 900 and more routes which had not been "expedited." The plea was that the new settlements forming in particular places needed these daily trips. The route was to be let to the lowest responsible bidder in accordance with law. Some man belonging to the "ring" made a bid so low that no one would think of competing with him. Having secured his contract for a weekly mail, he applied to have his route "expedited," that is, turned into a daily mail, and this was done at an enormous price.

**INDIAN.**—Professor W. L. Dudley delivered a lecture at Cincinnati, before the Scientific section of the Ohio Mechanics Institute, in which he made known the important discovery of the process for fusing and moulding iridium, a metal which has hitherto been considered as practically incapable of being formed into bars. The

method consists in applying phosphorus when the ore is brought to a white heat, and afterward eliminating the phosphorus by means of lime applied with great heat. The new metal has the appearance of steel, but is much harder, being next in hardness to the ruby. It does not rust and cannot be injured by acids. Professor Dudley stated that a bar of it had been used with gratifying success, in place of the negative carbon, in the electric light. It burned for sixty hours without any loss in weight or any perceptible change in form, iridium cannot be fashioned by hammering while hot, nor can it be filed. It is moulded into convenient forms, and then sawed or ground by rapidly revolving copper disks, treated with emery and water. Great interest has been aroused by this highly practical discovery, and already many uses for the metal have been suggested. Besides its applicability to the electric lamp it has been found to be superior to platinum in telegraph instruments. Professor Dudley gave an interesting history of the experiments of chemists and others with this metal, and he said that "it was now undergoing an elaborate examination at the Cincinnati University."

**THE SANDWICH ISLANDS.**—The islands are beautiful beyond description, and in many cases extremely fertile, growing heavy crops of sugar and rice, while the climate is such as a lotus-eater would revel in. But the main points of interest are the great volcanoes of Mauna Loa and Mauna Kea, whose peaks, from out the slopes of glorious tropic forests girding the island of Hawaii, tower upward to the height of more than 14,000 feet. Travellers visiting the island are generally satisfied with a sight of the small crater of Kilauea, which is always active, and only a few have ascended Mauna Loa, the huge crater of which disturbs the peace of the inhabitants of Hilo at long intervals. It is now in eruption; a great stream of lava, which a month ago was twenty miles in length, has reached the belt of forest on the low slopes of the mountain; and the burning chapparal and timber enveloped the entire island in a dense canopy of smoke. At the last great eruption four fountains of fire played uninterruptedly, to the height of 600 feet, and at a single explosion a valley was entirely filled up; while thirty-one people and more than 500 head of cattle were buried beneath an avalanche of red mud, which was ejected to a distance of three miles. Then came earthquakes so violent that people were unable to keep their feet, and these were followed by a tidal wave which swept away three villages and some seventy persons with them. The new lava stream is traversing a barren district, and the Kanakas do not fear a repetition of the events of 1868.

**THE MEXICAN.**—The inferior races of mankind, such as negroes, the Chinese, etc., have more memory than those of a higher type of civilization. Primitive races which were unacquainted with the art of writing had a wonderful memory, and were for ages in the habit of handing down, from one generation to another, hymns as voluminous as a Bible. Prompters and professors of declamation know that women have more memory than men. French women will learn a foreign language quicker than their husbands. Youths have more memory than adults. It is well developed in children, attaining its maximum about the fourteenth or fifteenth year, and then decreases. Feeble individuals of a lymphatic temperament have more memory than the strong. Students who obtain the prize for memory and recitation chiefly belong to the former class. Parisian students have also less memory than those who come from the provinces. At the *Ecole Normale*, and other schools, the pupils who have the best memory are not the most intelligent. The memory is more developed amongst the peasantry than among citizens, and among the clergy than among the laity. The memory remains intact in disease of the left side of the brain, and is much affected in those of the right, from which it may be inferred that the right side is more the seat of this faculty than the left. From a physiological point of view memory is diminished by overfeeding, by physical exercise, and by education in this sense that the illiterate have potentially more memory than those who know how to read and write. We remember, however, better in the morning than in the evening, in the summer than in the winter, and better in warm than in cold climates.

The Michigan Legislature is considering a bill providing for uniform and cheaper text-books; the books to be chosen by a superintendent of instruction and four commissioners appointed by the governor.



## EDUCATIONAL NOTES

## NEW YORK CITY.

The Board of Education met June 1. Among the important transactions was the request of P. F. D. G. S. 38 for maximum salary.

The authorization of trustees to advertising of furniture for G. S. 15, 17, 27, 59, 60.

The appointment of instructors in the Evening High School, Mr. Jared S. Babcock principal and the same assistants as last year.

The authorization of trustees to advertise the repair of buildings during vacation.

The firing of W. J. Robinson, G. S. 58, ten days' pay for inflicting corporal punishment. (Mr. Robinson gave as his excuse, not that the boys deserved corporal punishment but that he was suffering from mental anxiety.) To fit up P. S. 15; to put additional story on G. S. 7; to discontinue P. S. 47 Williamsbridge, (but this was laid over); to purchase property 66 Elm street for \$2,000; to put an addition to G. S. 72, costing \$49,470.

The unanimous adoption of resolutions relative to Prof. Alexander J. Schem, late assistant superintendent.

Whereas, this Board suffers the loss of one of its best and most faithful school officers, be it therefore

Resolved, That this Board will ever honor the memory of the late Prof. Alexander J. Schem, who by his noble character, his great scholarly attainments, his enthusiasm and love for his calling as well as by his modesty and amiability has endeared himself to his associates.

Resolved, That this Board tender its heartfelt sympathy to his bereaved family, and that an engrossed copy of these resolutions be forwarded to them.

## ELSEWHERE.

About forty female students are now pursuing their studies at the Harvard Annex.

TEXAS.—The State Teachers' Association meets at Corsicana, Navarro county, June 27.

THERE are two universities in Hungary, a polytechnic school, two normal schools, eighty-nine gymnasiums, and twenty-six real-schulen.

The Italian Government provides four female inspectors for the girls' schools under national control. These inspectors receive a salary of 2,000 francs a year and expenses and are said to do their work well.

A school of gardening and practical floriculture is to be opened at the Crystal Palace, near London, for the benefit of students of landscape gardening and gentlemen likely to be the owners, the conservators, or managers of great estates.

Mass.—Boston alone has contributed \$1,000 of the \$5,000 being raised to build a library building for the Rugby Colony, and the publishers of New York, Boston and Philadelphia have given 5,000 volumes as a nucleus for a library.

In consequence of the strong opposition to the suspension of the academic department of the New York University, the council of that institution has reversed its action in suspending it; and some liberal contributions have been made by the alumni, and more are promised to its endowment fund.

Lemon University at South Bethlehem, Pa., is one of the few collegiate institutions at which the tuition is entirely free. It was founded by the late Asa Packer, in 1863, and provides seven courses of four years each, under the instruction of a faculty numbering sixteen members, of which Robert A. Lamberton, LL. D., is the president. There is a total of 112 students pursuing their studies at Bethlehem. Mr. Packer's gifts to the institution amounted in all to \$2,500,000, exclusive of a tract of land containing one hundred and fifteen acres.

Ten women are pursuing a regular course of four years in the Harvard Annex. The ancient languages and mathematics are the most popular branches with the female students. The Greek class has eighteen members, the Latin class fifteen and the class in mathematics ten. Good progress is made and the students are all in excellent health. The recitations are held in private houses in Cambridge. The courses will continue another year at least, as contributions amounting to \$17,000 have been received.

DEATH OF AN EMINENT EDUCATOR.—The German papers announce the death of Dr. J. H. Wichern, chief of section in the Prussian Ministry of Public Instruction. In 1833 he went with his mother to live on a small, rudely cultivated farm near Hamburg, taking with him twelve boys

gathered from the worst haunts of vice and misery in the city. The boys received elementary instruction and were trained to labor on the farm. The project attracted general attention and from time to time other cheap houses were built, some for boys and some for girls, till in time the rough farm was converted into a little village, with its church, school-house, workshops and gardens. This was the origin of the "family plan" since adopted in reformatory institutions in many countries. Since its foundation the Rauha Haus has received and educated over 1,500 children.

CORNELL UNIVERSITY.—Prof. Russell, the vice president, and during the absence of President White at Berlin, acting president, has been asked to resign his chair, without reasons offered, and he has resigned. Prof. Russell has been a member of the faculty since the university was opened—about fourteen years since. A letter to the Times, however, gives an explanation. It states that Mr. Sage, one of the trustees, and a generous benefactor of the university, is a warm personal friend of Mr. Beecher, and that Prof. Russell's unwillingness to invite Mr. Beecher to preach at the university incensed Mr. Sage so much that he persuaded the Executive Committee of the Board of Trustees to ask Prof. Russell's resignation both of his executive office and of his chair of history.

It appears that, of the principals and superintendents of schools in Iowa, twenty-two per cent of those who receive \$1,000 or more per annum, received their education in colleges, and only five per cent in normal schools. The fact is probably on a level with the general rule. The public schools get their best brains from the colleges. And yet the serious evil of American education is that the high schools lamentably fail to prepare their pupils for college. There is, however, an improvement in this matter; the number of high schools fitting their pupils to enter college is increasing. The high school and the college should connect with each other. Keeping a gap between them seriously damages the interests of young people who wish to pass from the high school to the college.—*Methodist*.

MR. BENJAMIN FITCH, of this city, has just given to the Charity Organization Society of Buffalo property valued at \$200,000, to build and endow a "Fitch's Institute," which is to be similar to the Cooper Union in this city. It will include a free reading-room, library, lecture-hall, female training-school, a hospital where persons may be taken who have been injured by street accidents, and a free dispensary. A benevolent institution at Buffalo founded by Mr. Fitch, which has now been in existence for more than a year, and has proved a great success, is the Fitch Creche, for the care of infants and children. Mothers obliged to go from home to work by the day can leave their children there, and have them taken care of. The ground on which it was erected is valued at \$50,000. Mr. Fitch laid the foundation of his large fortune in Buffalo, where for many years he was in the dry-goods business.

PA.—The Duke of Sutherland visited the Carlisle Indian School. The party were very much interested by the different phases of Indian instruction they witnessed. The first room was occupied by a lady teacher and her dusky pupils in the study of reading. The next was an exercise in calisthenics, and the next was singing by the girls. The visitors asked many questions, conversing freely with both teachers and scholars. They saw the Indian youth in a variety of characters, as readers, writers, soldiers, carpenters, tanners, shoemakers, singers, band members, etc., etc. One tall youth appeared in all the paraphernalia of old "Spotted Tail," armed with bow and arrow, shooting at a target several hundred yards distant. One bright little princess of the Pueblo tribe came tripping and laughing up to the Duke, attired in magnificent apparel of robes and bells, feathers, hogs' teeth, rings, and so on, and daintily slipped into the Duke's hand a neat purse of her own make, for which the Duke kindly thanked her. After visiting the schools and workshops the 280 scholars with the teachers and visitors, assembled in the chapel. Captain Pratt named each tribe separately and the members of each stood up as the tribal name was announced. Under Mr. Curtin's direction the band of twelve Indian boys played "Nearer My God to Thee" for the guests, and were greatly applauded.

Judge Church has delivered an important decision, the first of its character in the State, in which he affirms the right of the plaintiff, a colored man, to send his children to the public schools. The plaintiff applied for a writ of mandamus against the Directors to compel their admission. The Directors, through the Superintendents,

answered the plaintiff's children were negroes, and that, the Board of Control having established a separate school for negro and mulatto children in their district, they were not compelled to admit them in a school where white children were. The court held that the 21st section of the act of 1854 was violative of the thirteenth and fourteenth amendments of the United States Constitution, hence unconstitutional and void. A peremptory mandamus was ordered and issued requiring and commanding the Superintendents to admit the children of plaintiff in the schools. The decision occasioned considerable excitement and feeling in social circles, but is generously accepted by the legal fraternity as a learned construction of the law involved in the proceedings. The Directors talk of appealing the case to a higher court.

IOWA.—Prof. Stephen N. Fellows, D.D., of the University of Iowa, makes the following statement, in a recently published pamphlet, concerning the work of his department: "Since 1873 there have been enrolled in the eight classes in didactics (including the present) one hundred and thirty-seven students—an average of over half the number in the successive Senior classes. Their scholastic and professional fitness for their work at graduation is indicated by the relatively high positions in the schools that they have secured and retained. Add to this the fact, as stated in the last report of the Superintendent of Public Instruction, that the number of principals and superintendents educated in the State University exceeds the number from all the other colleges and universities in Iowa, and an estimate may be formed of the relative value of the university as a factor in the educational work of the State."

In her address to the 29th graduating-class of the Woman's Medical College of Pennsylvania, Prof. Rachel L. Bodley gave many valuable statistics gathered from 189 letters received from as many graduates of classes from 1850 to 1890. Of the 189 writers, 166 are now in active practice. Of the monetary value of their practice, 72 replied. Receiving from \$1,000 to \$2,000 a year, 14; from \$2,000 to \$3,000 a year, 20; from \$3,000 to \$4,000 a year, 10; from \$4,000 to \$5,000 a year, 5; exceeding \$5,000 a year, 7, four of whom have from \$15,000 to \$20,000 a year. Generally, the figures signify actual receipts. Sixty-eight are members of medical societies, in 17 States. Five are members of the American Medical Association. Five (from Rhode Island, Ohio, Illinois, New York and Tennessee) have represented their State societies in the American Medical Association. One has been invited, this year, to accept the position of member of the medical examining committee of the Medical Department of the Iowa State University. To the question of the influence of the study and practice upon the domestic relations as wife and mother, 52 replied. Influence favorable, 45; not entirely favorable, 6; unfavorable, 1. One of the early objections to the practice was that women could not endure the exhausting work, yet of the 276 graduates since 1850 only 32 have died. Some have practiced in cities and some in the country. One says that she often rode ten miles by night over bad roads, across swollen streams, etc. Of the whole number of graduates, 276, seventy-five were married before they studied medicine. Of the 54 who have married since, only five have been compelled to abandon the practice. The graduates who had sufficient income without practice have not on that account refrained from practice.

## FOREIGN.

BERLIN.—Belgium promises to become the great industrial teacher of Europe. Many foreigners are now attending her schools. She has 59 technical schools, 32 industrial schools and a higher commercial school—all receiving funds annually from the State.

SWEDEN.—The Lower Chamber of Sweden has requested the government to abolish Latin as an obligatory branch of instruction in all the gymnasiums. Eighty-five members voted for the abolishment, and thirty-eight against it. The government has not yet announced its decision.

AUSTRIA.—According to the program of studies for the summer 1881, forwarded to the Bureau of Education, the University of Innsbruck has 108 professors, of whom ten are Jesuits. The number of students is 649, viz: 211 in the faculty of theology, 228 in jurisprudence, 86 in medicine, and 124 in philosophy. The students represent twelve different nationalities. The number of American students is seven.

FRANCE.—The Educational Congress just held in Paris recommended that primary instruction in France should



be rendered obligatory, and advised the creation of primary schools in hamlets three miles distant from the central town or village of the commune, the creation of sectional schools for several outlying hamlets contiguous to each other, and the establishment for each teacher of a class maximum. Forty pupils were as much as a schoolmaster or mistress could attend to. The cramming system was condemned. M. Jules Ferry, the Minister of Public Instruction, assured the Congress that instruction would be rendered obligatory, and promised to fix the class maximum at forty. There are now 4,700,000 children taught in the French communal schools.

**AUSTRALIA.**—The number of day schools in operation in December, 1879, was 1,538 and the number of night schools 180. The total number of children enrolled during the year was 227,775, viz., 119,237 boys and 108,538 girls. The number of children in average attendance throughout the year was 119,259, viz., 62,466 boys and 56,793 girls. The total number of teachers employed in state schools in 1880 was 4,185, viz., 1,836 males and 2,349 females. The system of penny savings banks has worked satisfactorily. The number of banks in 1880 was 94, the number of depositors 13,458 and the total amount deposited £3,131.

The University of Melbourne had 273 students in 1879, viz., 73 in the faculty of arts, 51 in law, 40 in engineering and 109 in medicine. The receipts of the university in the same year amounted to £17,005.

The buildings of the Melbourne public library have cost already £111,604 and are still unfinished. The number of books and pamphlets is 120,543.

**ENGLAND.**—In 1860 the number of science schools in England was 8; in 1870 it was 79 and in 1880 it was 1,391. The number of classes in 1860 was 20, in 1870 it was 2,204 and in 1880 it was 4,932. The number of persons receiving science and art education was in 1860, 386; in 1870, 34,283 and in 1880, 60,854.

An immense step has lately been taken in the spread of compulsory education. Since Mr. Mundella took the education department in hand great efforts have been made to stimulate the actions of school boards and attendance committees in the enactment of compulsory by-laws. The efforts of the education department have at length resulted in the general adoption of compulsory by laws all over the country. A paper recently issued gives a list of several hundred school boards and school attendance committees in boroughs, as well as more than 3,000 parishes, which have voluntarily adopted by laws to which the department gave its sanction in May last.

The scheme for the establishment of a university college in Liverpool is now almost matured and it is expected that the college will open for its first session in October next. The donations have now reached the sum of £100,000 and the task of draughting a constitution for the college is now being performed by a special committee. The Earl of Derby has accepted the office of president, the vice presidents being Mr. Christopher Bushell and Mr. Wm. Rathbone, M.P.

The senate of the University of London has approved the report of the committee on examinations and is now pledged to a scheme of examinations in the theory and practice of teaching similar to that adopted last year at bridge. The main difference between the two schemes are two: 1. No candidate will be admitted to the examination who is not a graduate of the university. 2. In addition to the written examination candidates will be required to give proof of practical skill in teaching. A special certificate to be called the "teacher's diploma" will be awarded to the successful candidates.

**FRANCE.**—The members of the recent pedagogic conference were elected in the proportion of two members for each department by all the primary teachers resident therein. A large number of women were elected delegates. One lady, from Algeria, was elected President of the section which dealt with infant schools, and was much complimented upon the report she drew up. Two questions were submitted to the conference by the Ministry of Public Instruction: First, How to fill the communal schools? and second, What is the best mode of teaching the junior classes? On the first point, the conference was unanimous in demanding that primary instruction should be rendered obligatory; but, in order that compulsion should not go hand in hand with oppression, it recommended the creation of primary schools in hamlets three miles distant from the central town or village of the commune. Forty pupils were as much as a teacher could attend to. The conference also advised the

government to render the schools more attractive. It favored the appointment of female teachers for all the junior classes. M. Jules Ferry, Minister of Public Instruction, said the resolutions of the conference would be most carefully examined by his department, and would be taken as a guide, for they were based on pedagogic experience and good sense. Instruction would be rendered obligatory, and the maximum of pupils be fixed at forty for each teacher. The Minister was very emphatic in declaring himself a partisan of lay instruction. He was also in favor of the frequent school excursions and gymnastic exercises. The school teacher henceforth would not be, as hitherto, the serf of the feudal lords, of the priest, or of the prefect; he would be completely emancipated from all his masters, and be only in subjection to the school authorities. In the evening of the closing day the members of the conference were received by Mme. Jules Ferry at the Ministry of Public Instruction.

Mr. Jules Ferry, Minister of Public Instruction, has submitted to the Chambers a bill to regulate private secondary education. Henceforth every Frenchman proposing to open a private school must produce the following documents:

1. A diploma of bachelor of letters, or bachelor of science.
2. A certificate of aptitude for teaching, to be awarded, after examination, by a specially appointed party.
3. The names of his assistant masters, who must show similar qualifications.
4. A plan of building and premises, and a program of studies.

If the bill passes, it will come into force October 1 next.

**GERMANY.**—Great efforts are being made to obtain for graduates of the realschule (non-classical secondary school) the same privilege that those of the gymnasium (classical secondary schools) enjoy, namely, to enter the university if they choose to do so. Heretofore no young man could be admitted as a regular university student unless he was a graduate of a gymnasium. Both the gymnasium and the realschule have a nine years course, but, while the gymnasium lays great stress in the teaching classics, the realschule devotes more time to the modern languages and natural sciences. Greek is entirely excluded from the realschule, but Latin is taught for nine years. Some of the universities have already expressed their willingness to admit the graduates of the realschule, but the majority persistently refuse to yield. At the twenty-fourth meeting of the General German Teachers' Association, to be held at Karlsruhe during the second week of June, the following subjects will be discussed:

1. Our juvenile literature—what it is and what it ought to be.
2. The present organization of creches, kindergarten, and review schools.
3. School discipline.
4. Is the introduction of uniform readers to be recommended for the whole country?
5. Pestalozzi on the duty of mothers.
6. The prevention of myopia.

The expenditures of the city of Berlin for public school amounts to \$2,015,547, and for orphan asylums \$166,000.

The Prussian Minister of Public Instruction is preparing a plan for the reorganization of the secondary and lower technical schools. There is a growing demand for secondary schools without Greek and Latin.

Formerly lessons in gymnastics in girls' schools were given by male teachers, but the government is now endeavoring to supply ladies for this purpose. A large number of female teachers are at present studying this specialty. At a recent examination at Berlin twenty-three ladies received the diploma of teacher of gymnastics. Examinations for professorships. In 1880 the ten Royal Commissions for the examination of candidates for professorships in secondary schools have examined 692 young men, of whom 641 were found capable of teaching in various grades of gymnasien and realschulen. Before these young men receive an appointment they have to serve for one year in a school assigned them. This year is called the probation year. In case the candidates do not show any fitness for school work they receive no appointment, although their diplomas may be excellent.

We must learn to infuse sublimity into trifles. That is power.—MILLER.

## LETTERS.

AN extra term or "Summer Normal" is held at Wheaton College, Wheaton, DuPage Co., Ill., and, judging from what I hear, I think the Wheaton School excels the one at Valparaiso, Ind. I attended the Normal at Wheaton, last summer, and was well paid for going. J. P.

I have taken the JOURNAL for the last two years and I like it much better than any other educational paper. I try very hard to keep up with its precepts and I know I have succeeded, in some particulars anyway. I have a sort of kindergarten establishment and conduct things so differently from most of my fellows in the work that if it were not for the help I receive through your columns I should feel almost discouraged at times at finding myself so isolated. We have in my room what the children call "real good times," and one result is the regular attendance—which is one of the highest or greatest blessings a true teacher would wish for—and I am enabled thereby to accomplish what would otherwise be impossible. I try to have something new every day and am so regardless of old customs in my ways of proceeding I am afraid many pedagogues would hold up their hands in horror.

The JOURNAL contains so many practical hints that I welcome it as a friend and know it would be a paying investment for any one. K. M.

I am teaching a school and do not have many small pupils; but in spite of all that is said about keeping children constantly employed I can not do it. I do not know how. I give them lessons in writing, but they get a long lesson of that in a short time. I put pictures on the board for them to draw and they will draw it once and then seem to think their work is done. They do not try to make any better ones. How can I encourage them to work longer at it and try to make the drawings better?

I make a practice of keeping in pupils when they do not learn their lessons, but not as a punishment. If it is a new school I explain that at once, and thereby gain the good will of the children. I tell them I wish to help them, and not punish them.

Parents sometimes object to having their children kept after school. When such is the case I visit the parents and convince them that it is for their children's good. Show them that you mean it kindly and they will be satisfied.

KEDMOTH.

**HOW POOR TEACHERS GET INTO THE NEW YORK CITY SCHOOLS.**—To explain this problem I must tell a little story: When I was young I took H. G.'s advice and went West. I was to get rich by sheep-raising. Having secured a good pasture for 3,000 sheep, I hired a son of the western soil, who said he knew all about it, to buy that number, selecting those that were young and good. Before the first 1,000 were secured I found I had some laden with years, but light of wool. I also found in the flock three goats—real scrubs—with my mark upon them. I asked my agent to explain as to the age of the sheep. Knowing me to be very soft-hearted till I get my back up as round as a half moon, he tried me on that side.

"You see, there is two or three friends of mine who has pulled me out of a tight place, and when they asked me to take their whole flocks I lumped it to please 'em. I thought a few old ones wouldn't count among 3,000. I didn't look the flocks over pertickler like. A feller can't be pertickler with another feller as has pulled him out of a tight place."

"But how about the goats?"

"The one that sold me them goats has never pulled me out of a tight place, but he's got a grip on me, and may pull me into one. He said you wouldn't know but what they was sheep, and so I let him count 'em in."

I got another agent, a man who know sheep, who had a conscience, who had never been pulled out of a tight place and could not be pulled into one, and then I looked after him. I did not get rich on sheep, and that is why I am here in New York, and am only AN OLD FELLOW.

**KANSAS.**—The Kansas prohibitory law has now been in force for a fortnight and some evils are already apparent. In Leavenworth, the largest city in the State, the law is set at defiance and the saloons are kept open as usual. Many of the leading druggists of the State decline to sell tinctures, camphor and the like until the true interpretation of the law is tested in the courts. And many of the leading physicians decline to take the oath required to enable them legally to prescribe any form of alcohol. Whether public opinion will come up to the standard of the law and druggists and physicians will comply with its provisions yet remains to be proved.



## EDUCATIONAL MISCELLANY.

## Luminous Paint.

This invention of Balmain patented by him in 1877, was, by reason of his failing health and subsequent death, not introduced to the public until 1879. Since then it has been further developed and improved by experts, and its merits widely and fully tested in England. The compound is prepared originally in the form of a white powder. This powder is mixed with suitable oils or varnishes which in themselves do not effect its luminosity, and is ready for application to any desired surface in the same manner as common paint. A surface painted therewith will, after exposure to light from any source, not only appear luminous in the dark and shine so as to be clearly visible for hours, but also emit sufficient light to dispel the darkness and illuminate surrounding objects.

The action of light upon a surface coated with this luminous paint is seemingly analogous to that of a blow upon a bell or sounding board. The luminous rays striking the paint apparently cause a vibration of its molecules corresponding to the vibrations of the bell or board. These vibrations, produced and maintained so long as the light shines upon the paint, continue after the light is withdrawn for a period commensurate with its intensity, just as the vibrations of the bell continue after the hammer has ceased to strike it, for an interval whose duration is due to the force of the blow delivered by the hammer. Hence the time during which a surface coated with the phosphorescent paint will remain luminous in the dark, as well as the intensity of its luminosity, is determined not so much by the duration of its previous exposure to light as by the intensity of that light, so that a prepared tablet exposed for a few minutes to the intense glow of an electric or magnesium light, will thereafter emit more light and remain longer luminous in the dark than will a similar tablet exposed for many hours to clear sunlight. The luminosity of the paint gradually fades away in the dark and finally disappears entirely, but is instantly revived upon exposure to the light. Repeated excitement of the paint does not appear to affect its phosphorescent quality in the least, and paint prepared for years is as effective as when first used.

Recent experiments made by Messrs. F. W. Devoe & Co., have resulted in the production of different colors in the light, so that the paint will be adapted to the production of all artistic effects in the dark.

The North London Railway in England have applied it to the interior of their coaches running through tunnels, so that the carriages when in the darkness of the passage remain light as day. Luminous ceilings in rooms exposed some part of the day to the light, will keep the room constantly lighted without resort to artificial illumination. The paint is unaffected by moisture, and divers, wearing suits painted with the compound, are enabled thereby to see clearly the objects surrounding them in the water and to enter the dark cabins of submerged vessels and examine the contents thereof with entire clearness of vision.

Signs lettered with the paint answer the purposes of ordinary signs by day, and are luminous at night. Buys in the harbor, dangerous spots in the streets or wharves, life preservers on boats, and small boats themselves, may be made conspicuous on the darkest nights. And in the house, the match box on the table, the dial of the clock and the position of all objects which it is desirable to quickly find in the dark, may be rendered clearly apparent the night long.—*Industrial News.*

## Kitchen-Garden Association.

In New York City there is an association by this title. From a report by the Secretary, Miss Grace H. Dodge, we learn that during the year there have been twenty-nine classes, comprising 990 children, in New York and its vicinity. These were taught by volunteer lady teachers, with the exception of two or three, who receive salaries, and devote their time to teaching the system. They have been held in Industrial Schools and Asylums, and in the rooms of the Association. These rooms have been in the building rented by the New York Cooking School, 22 E. 17th Street. Three of these classes were composed of bright children, taken from neighboring Public Schools. One was a class of little girls from wealthy families, whose parents were anxious to have their children learn the details of household work in this bright and charming Kitchen-Garden way, and paid for the instruction

given them. The fifth was a class of girls from 14 to 20 years of age, who, although busy all day in stores and factories, gladly gathered on Tuesday evenings to learn not only about the necessary work of the house, but also about hygiene, care of the sick, etc. In the 49th Street Episcopal Orphanage there have been most successful classes, twice a week, taught by the Association Teacher.

In Brooklyn there are six successful classes, numbering in all 120 children. In Philadelphia there are two classes, consisting of 48 scholars. From Boston they write of three classes, one, for deaf mutes, taught this year.

Albany and Troy have each had two full classes. Providence has had 60 girls under Kitchen Garden instruction, and they are planning for still further work next year. From Pittsburgh, accounts have come of a most successful class and exhibition. From St. Louis (where Miss Torrey, the Associate Normal Class teacher, trained a class of twenty-four ladies this Fall), we learn that these ladies have organized and carried on one or more classes. Cincinnati, though not able to send for Miss Torrey, has had a large and enthusiastic class. Here, an interesting feature of the work is a lunch of Alderney milk, cakes, rolls, etc., which is provided for the children each week, and by means of which, they are taught practically how to set, wait on, and clear the table, besides washing the dishes. Many smaller places, such as Wilkesbarre, Meadville, Newark, Poughkeepsie, Elmira, Rochester, and Newport, have started, and are carrying on successful classes.

The system is being introduced among the colored people. The originator, Miss Huntington, has been to Hampton Institute, Virginia, and trained two of the teachers, as well as the graduating class there. From Hampton, it is hoped and expected that Kitchen-Garden will spread, not only among the colored people of the South, but also that it will be successfully carried to the Indians.

It is the desire of its managers to carry the system into every Industrial and Public School. The necessity of such an education is becoming more and more apparent, as they become better acquainted with the ways of living among the poor. The tendency of the girl of to-day, is not in the direction of household industry. Girls having been through our Public and Normal Schools, look down upon housework as debasing, and almost invariably they seek positions in stores, as clerks, saleswomen, cashiers, or book-keepers. This avenue of employment is rapidly becoming overcrowded with applicants. There is scarcely anything more difficult than to secure a position in a store. In a large measure this comes from a mistaken feeling of independence. The excitement of store-life attracts many girls. They do not stop to consider the exposure they are subjected to, or the severe strain upon their constitutions, from the constant standing, improper mid-day food, and inclement weather. Nor, that in a monetary point of view, they are not nearly as well off as the domestic in a private family. No girl, as clerk, can net \$15 to \$20 per month, as a good domestic can. It is with the greatest difficulty, ordinarily, that she can make ends meet, unless she has her home and board given her by her family.

## Origin of Matter and Force.

If we attempt to find our way into the past history of the world, books and manuscripts lead us but a short distance. We then resort to monuments and ruins and the relics that we find among the former habitations and graves of remote generations. Next we betake ourselves to stratified rocks and to fossils, and by means of these we reach a time when the ocean covered the entire globe. We then contemplate the earth as a planet, and, adopting the nebular theory, (though not that of Laplace,) we assume that there was a time when the earth and all the planets were connected with the sun, and when the whole together was a rotating mass of nebulous matter, more thin and attenuated than any gaseous substance with which we are acquainted. Whence came this nebulous matter? It is highly probable that it formerly existed in a still more expanded state, and consisted of ether (etherium), a substance that fills all space and permeates all planetary bodies; a substance the condensations and undulations of which produce light, heat, magnetism and electric phenomena. Possibly etherium was the original mother matter of the chemical substances that constitute all worlds.

Let us suppose that in a vast region of infinite space the ethereal matter gradually radiated away its heat, and thus changed into nebulous matter. Let us suppose that a large number of nebulous clouds were thus formed at so great distance from each other. The mutual attraction of these cloudlike masses would ultimately bring them into collisions which would cause the united mass to rotate upon its axis. It was from such a rotating nebula that, according to the opinions of our most eminent astronomers, the solar system was formed. There being at first no central sun, the parts farthest from the center of the nebula moved fastest, and those nearest the center slowest. The ethereal matter presented some resistance to the nebulous movements, and this resistance tended to carry the nebulous matter to the center. The parts of the nebula that were the least dense and those parts that moved most rapidly were most affected by the ethereal resistance. Rotation, gravitation and the resisting medium necessarily caused a great variety of chemical elements to press together into the center where combustions and radiations would be certain to occur and produce a condensed mass—a sun. This central mass, though at first small, continually increased until it either absorbed or controlled the whole nebula, and introduced the laws discovered by Kepler and Newton. That portion of the nebula that was most distant from the center possessed the most centrifugal force, and could not therefore be drawn into the sun, but formed a revolving disk, analogous to Saturn's disk of rings. All but a seven-hundredth part of the matter of the solar system is concentrated in the sun. This disk, from which all the planets were made, was a very small part of the original nebula.

After the rings were formed, and before they were concentrated into globes, each ring, in consequence of gradual condensation, broke up into separate nebulous masses, which move in different orbits, and consequently soon came near enough to so attract each other as to come into collision and form a single planet, the axial rotation of which was caused by these collisions. But the asteroidal ring was so perturbed by the attraction of the enormous mass of Jupiter (when Jupiter existed as a ring), as to prevent the asteroids from concentrating into one globe. The small quantity of matter in the asteroidal ring, and also the small quantity in Mars, plainly indicate that Jupiter has appropriated to himself a quantity of matter that, in a fair division, would have been given to the planets below him.

Some astronomers have supposed that the asteroids are fragments of an exploded planet. It is a much more reasonable supposition that they are the fragments of a nebulous ring which was prevented from concentrating by the attraction of Jupiter.—*From Problems of Creation.*

**GYMNASTICS.**—Physical vigor is the basis of all moral and bodily welfare, and a chief condition of permanent health. Like manly strength and female purity, gymnastics and temperance should go hand in hand. An effeminate man is half sick: without the stimulus of physical exercise, the complex organism of the human body is liable to disorders which abstinence and chastity can only partly counteract. By increasing the action of the circulatory system, athletic sports promote the elimination of effete matter and quicken all the vital processes till languor and dyspepsia disappear like rust from a busy plowshare. "When I reflect on the immunity of hard-working people from the effects of wrong and overfeeding," says Dr. Boerhaave, "I cannot help thinking that most of our fashionable diseases might be cured mechanically instead of chemically, by climbing a bitterwood tree or chopping it down, if you like, rather than swallowing a decoction of its disgusting leaves." The medical philosopher, Asclepiades, Pliny tells us, had found that health could be preserved, and if lost, restored, by physical exercise alone, and not only discarded the use of internal remedies, but made a public declaration that he would forfeit all claim to the title of a physician if he should ever fall sick or die but by violence or extreme old age. Asclepiades kept his word, for he lived upward of a century, and died from the effects of an accident. He used to prescribe a course of gymnastics for every form of bodily ailment, and the same physic might be successfully applied to certain moral disorders, incontinence, for instance, and the incipient stages of the alcohol habit. It would be a remedy *ad principium*, curing the symptoms by removing the cause, for some of the besetting vices of youth can with certainty be ascribed to an excess of that potential energy which finds no outlet in the functions of our sedentary mode of life. In large cities parents owe their children a provision for a frequent opportunity of active exercise, as they owe them an antiseptic diet in a malarious climate.—*Dr. OSWALD.*



### Study of Bones.

Prof. O. W. Holmes has introduced into the Harvard Medical School a decided improvement in the study of osteology. While abroad, during the summer, he purchased for the school ten skeletons, each of which has been divided into parts—skulls, thorax, spine, legs, and arms. These parts are each provided with a wooden box with a sliding cover, and a handle to carry it with. The parts are distributed to those students who desire them on a stated day. Each box is lettered and numbered and the student enters his name with the letter and number of his box in a book kept for the purpose. The parts are kept six days, a fine being incurred for each day beyond the prescribed time.

This plan of circulating bones is of great use to the student, as it enables him while reading to locate and fix various facts by actual observation, about the only way, indeed, in which the facts can be fixed. By the study of the bone a practical working knowledge is obtained, which it is not possible to gain from mere reading. Any one who has studied osteology "by the book," and then gone to the skeleton for confirmation of facts, must have been struck by the great dissimilarity of his ideas of the subject, and the facts as found. No matter how precise and carefully worded the description of the object may be, we fail to fully comprehend it, unless we see the object itself; and by seeing and handling the object we can clinch the facts about it into the memory, so that they will not easily drop out.

A system somewhat similar to this one is in use in the Columbus Medical College of Ohio. Here the bones under discussion are handed to the class during the lecture, and the various points are verified by the students as they are mentioned by the lecturer. The method of the Harvard School seems better, inasmuch as the bones are taken to the room of the student and there studied at leisure, and all the various points seen in their relation to each other.

—Scientific American.

### Forests and Rainfall.

Whether the forests insure a greater rainfall in their vicinity than is received upon an equal area of open land has been disputed among scientific men, though the preponderance of opinion now seems to favor the conclusion that the rainfall is most abundant in wooded regions. This corresponds also with the prevalent belief of the common people, the unscientific but practical observers.

A special committee of the Royal Academy, of Vienna, reporting in 1874 upon a "Memoir of Mr. Hofrath Wex upon the Diminution of the Water of Rivers and Streams," used the following language, upon this particular point:

"The question of the influence of forests upon the amount of precipitation has for some time engaged the attention of naturalists. Such an influence has been asserted partly from theoretic considerations and partly on account of the entire change presented by the climatic relations of the countries in which the forests have disappeared. It is probable that such influence exists; but while on the one hand its consequences may be over-estimated, on the other hand there is want of direct proof, inasmuch as the rain measurements have been continued for too short a time, both at stations situated within the woods and outside of them in the open fields.

"The commission consequently concluded that an influence of the woods upon the amount of rain deposited, and especially upon the yearly contribution, is probable, although direct observation does not give sufficient evidence to determine its extent or positively its existence."

Dr. Rogers of Mauritius gives this testimony: "So late as 1864 the island was resorted to by invalids from India, as the 'pearl' of the Indian Ocean—it being then one mass of verdure. But when the forests were cleared to gain space for sugar cultivation the rainfall diminished, the rivers dwindled down to muddier streams, the water became stagnant in cracks, crevices and natural hollows, while the equable temperature of the island entirely changed, drought was experienced in the midst of the ocean and thunder showers were rarely any longer witnessed. The hills were subsequently planted with trees and the rivers and streams resumed their former dimensions."

The Island of Ascension was formerly almost a barren rock. The supply of water was very scanty, derived solely from a few springs and water was often brought from the Cape of Good Hope and even from England for the needs of the garrison. About twenty five years ago the planting of trees and shrubs and the cultivation of the soil were

undertaken vigorously. The water supply has increased with the progress of this work until now it is excellent, and the garrison and ships visiting the island are supplied with abundance of water and vegetables of various kinds.

Observations in France by M. Faurat, reported to the Academy of Sciences, showed that in a dense wood of five hundred hectares a rain gauge fixed on a tall poplar received much more water than one of similar height three hundred meters beyond the borders of the woods. Experiments continued during two years confirmed the first results and an instrument placed over a forest of Pinus sylvestris at twelve meters' elevation received ten per cent more water than one at the same height in the open fields.

—Popular Science.

### Where to Spend the Summer.

#### EASTERN LONG ISLAND.

The teachers will endeavor to find a suitable place to spend a few weeks in recreation. Where shall it be? To those who desire to be beside the ocean and yet away from the city there is no pleasanter spot than Eastern Long Island. The villages of Orient, Southold, Greenport and Sag Harbor are delightfully situated. To reach these the steamer W. W. Coit leaves pier 25 East River on Tuesday, Thursday and Saturday—passage \$1.25. Capt. George C. Gibbs is a careful and experienced sailor, a thorough gentleman and very attentive to the wants of his passengers. The "boat" leaves at five o'clock a.m., and a beautiful view of the Sound is thus obtained. No lovelier sail can be imagined than this on a fine moonlight night. Orient is at the extreme eastern end of the Island as you turn into Peconic Bay. To make its plain fancy Long Island to be a whale moving eastward with his mouth open. At the tip of his upper jaw is Orient, at the tip of his lower jaw is Montauk, and between the jaws is famous Shelter Island.

The "Coit" reaches Orient about three o'clock in the morning, then proceeds to Manhasset, then to Greenport, then to Prospect, then to Southold and then to Sag Harbor. Thus a fine view of the loveliest water-scenery is had; the land is in view all the time on one side or the other.

The villages above named are all summer resorts for those who are tired of the city. Some names will be cited to aid those in search of boarding places. At

**ORIENT**—Mrs. Captain Edwin Brown, Mr. Young, Mrs. Merriman and the Orient Point Hotel. This village is admirably situated; the land is narrow, so that one can gaze on the Sound or the Bay as he may choose.

**GREENPORT**—is a busy seaside town, opposite Shelter Island. Here are the boarding houses of Mrs. Booth, Mrs. Clark, Mrs. Ashby, Mrs. Burr, and several hotels.

**PROSPECT**—Here is the celebrated Prospect Hotel, which will accommodate 300 guests; here are also about 75 cottages, some of which can be leased.

**MANHASSET**—The Manhasset Hotel accommodates 300 guests and is finely situated.

#### SOUTHOLD.

At this village Mrs. Maxwell and the Judd House receive boarders. The village is beautiful, but it is not as near to the water as the other places.

#### SAG HARBOR.

Guests are received by Mrs. Wade, Mrs. Morris, Mrs. Tooker, Mrs. Douglas, Mrs. Polly, Mrs. Grohaur and at the Nassau House and the American House. This village is admirably situated, being penetrated by an extensive "Cove," which renders boating safe at all seasons. There are two newspapers published, the *Express*, an able exponent of the republican faith, is edited by John B. Hunt, Esq. There are several churches, whose appearance indicates the sincere religious faith of the citizens. Captain George C. Gibbs of the "Coit" resides here in a charming residence; his stable is well worth a visit. Judge Daly has a fine residence here. Mr. Joseph Fahy has located here an extensive manufactory of watch cases and will give a great impulse to the business interests of the lovely village.

The "Cove" is a sheet of water that has all the advantages of a fresh-water lake. Captain John Gray has this season put on it a new and beautiful sail-boat, the "Bay Queen" and those who ride in it will long remember the

occasion. There are numerous sail and row boats and their gay pennons make the scene a most interesting one. Crabbing is a favorite amusement. Long Beach is a fine spot for bathing purposes.

**BRIDGEHAMPTON (4 MILES) AND EAST HAMPTON**—7 miles distant, are both famous as summer resorts. They lack the shade of Sag Harbor and are not close to the shore, still they are very much admired.

#### MONTAUK POINT.

can be reached by sail boats; it is far out in the ocean and is visited by sea breezes at all times. Wild storms rage over it in the winter.

From this description it will be seen that this portion of Long Island cannot but be a favorite resort for those who are weary of the heat and noise of the city. By a visit to Sag Harbor made during the past season the writer is enabled to say that it possesses in a remarkable degree the requisites needed to make the summer delightful.

A. M. KELLOGG.

### What is the New Education?

Go into one of some thousands of superior schools for little children, now happily more easily found than a few years ago,—scattered through the country from Maine to Mexico, and sit out a day's work.

There is a crowd of children learning to read. Instead of beating up toward a simple sentence for six months, through a mass of unmeaning characters called the alphabet, these children adopt Horace Greeley's recipe for resumption,—the way to read is, to read. A familiar object, known to them all, or a picture that calls up the mental object, is presented to them. "What is this?" "This is a cat." The sentence, or as much as the teacher desires to impress, is written on the board, shown to the children as their answer. The word "cat" is fixed in their minds as the name of pussy at home. In the same way, word after word, sentence after sentence, are written on the blackboard or shown on cards, till the children have acquired a considerable vocabulary for reading. Reiteration is here the law. The teacher keeps at it until great numbers of words and sentences are lodged, in the most natural way in the children's minds; pronounced in the most natural tones of voice; explained to the comprehension of the dullest. In this way the child begins to read the first hour in school, in the same way he learned to talk; from being shown objects by his mother, and repeating after her, their names, till they are lodged in his memory for life.

The same day begins the first lesson in writing. The child attempts to imitate, with slate and pencil, the words written or printed on the blackboard. Pretty bad scrawls at first, but the little things keep at it, comparing slates, and, after a few days, bring forth a hand-writing a good deal more legible than the cursive of Horace Greeley, Gerritt Smith, or Rufus Choate. Reiteration still. The way to learn to write is—to write and keep at it.

Along with this begins drawing. Nothing is so attractive to the children as testing the eye and the hand by the simplest forms: the line, the angle, the square, the circle. It's astonishing how they get on. Every child naturally desires to represent what he sees. If the venerable fogies who denounce drawing as an "ornamental branch," will produce a wide awake boy who doesn't cover the nearest board fence with his work of art, or whittle all creation to pieces, we will confess to the impeachment.

Now, after reading is well along, comes the analysis of words into letters, pronounced by their radical sounds; and spelling by the phonic method. But, mind, these children are all the time learning to spell while learning to write and read, for writing a word often stamps it forever upon the imagination.

No English-speaking man attempts to spell in any other way than by recalling the look of the word as written or printed. So, by filling the blackboard and the slates with words of common use, the children are all the time learning to spell—not long columns of useless, technical, or impossible words, out of a spelling book, but the words that must be used in their daily life.

At the same time the children begin the study of grammar, in the natural way, by oral instruction from their teachers in the "art of speaking and writing the English language correctly." Bad grammar and habits of punctuation, brought in from outside, are all the time corrected. The children write sentences, little stories—whatever they will—as "language lessons," on their slates. It is surprising how easily and how well they do it. You'll find in a



school of fifty little children half a dozen compositions as pithy, decisive and poetical as the proverbs of Solomon. These children learned to write as Shakespeare learned—by having something to say, and saying it, in their way, with the pencil or pen.

From the beginning, the whole school is instructed from habits of observation through object-lessons. The pupils learn the different geometrical forms by the use of blocks, and never forget them. A simple flower is given, and each questioned as to what he sees; and in half the time that the boys of our old district schools would cut their desks to pieces, or the girls eat up a pocketful of slate pencils, all these children learn the simple elements of botany, and their eyes are forever opened to the glory of the flowers of the field. The same exercise with minerals, birds, fishes, through the domain of animated nature up to the structure of man, year by year, is opening their eyes and training their faculties to read the Book of Nature, so long a sealed volume to masses of mankind.

Very early begin the lessons in numbers, involving simple notation, numeration and the primary operations—all taught by handling objects in the most familiar way. Geography is sprouted by teaching points of the compass, distances in the school-room, school-yard, village, or city streets, public buildings, with daily observation of the natural features of the accessible country. Geography, like charity, "begins at home."

But how about school discipline, all this time? While the children are busy in these pleasant ways the school takes care of itself. Neither children nor grown people commit crimes while busily occupied in agreeable and wholesome ways. These children are not tied to their benches. Half the time they are on their feet, around the teacher, or at the table loaded with pictures, blocks—whatever is necessary to their work. A short, wide-awake lesson, then a march around the room, an exercise in gymnastics, a little song, puts them in order for another ten minutes of work. Music is another of the rocks of offense by the venerable fog, who seems to forget that when music began to come in the rod began to go out.

The new education in the modern school simply utilizes this law of variety; leads the children in pleasant ways from topic to topic, so that in a year it knows more about a dozen useful things than it knows about reading in the old district school, and has lived through the happiest year of its life, because its schooling has simply been the continuation of the natural methods of developing its faculties, began at the mother's knee.—*Journal of Education.*

### Seeing and Thinking.

There is a story which is mentioned by Dr. Darwin, about a little monkey in the Zoological Gardens, which shows you another kind of connection between sensation and action. There was a large baboon in the same cage, which was constantly frightening this monkey and injuring him whenever he could get at him. But once, when the keeper was sweeping out the cage and kneeling on the floor, the baboon attacked him, and bit him severely on the back of the neck. The little monkey immediately got hold of the baboon's leg, and bit it, and tried by every means in his power to get him off the keeper. He was exceedingly attached to the keeper, and he wanted to get the baboon off. This, you see, was not a direct correspondence between any particular sensation and the particular action. You might very well say that when the monkey saw the grinning teeth and heard certain growls, that naturally suggested the action of running away—and that, no doubt, is the beginning of the instinct by which animals save themselves from their enemies; but that would not in the least degree make him go and attack the baboon himself, when the baboon was not hurting him, and was not dangerous to him, but was dangerous to the keeper.

In putting the thing in that way I could not help indicating what was the precise connection that the little monkey had made in his own mind. He had got that which we call a *proposition*; that is to say, the baboon is dangerous—not dangerous to me only, but dangerous generally—and that, you see, does not merely connect one particular sensation with a particular action that is to follow from it, but it is combined with an almost infinite variety of sensations which will indicate what is the particular action that is to flow from each of them. It would have been impossible to pack into the human brain, complicated machine as it is, all the connections that we should want between our sensations and our actions without some

such artifice as this. The idea of the baboon is a group of sensations which the monkey had got, and each one of them called up all the others. When he saw his teeth he thought of his growl and his bite, and so the whole image which he had got of the baboon was all in one piece, so that when he got a part of it, it would naturally call up all the rest. But then, besides that had tacked on to this a certain feeling which we express by the word "dangerous"—the feeling of fear, not, merely for one's self, but for other people, which, again, is an exceedingly complicated feeling, and it must have been derived from an enormous number of experiences of danger and evil, not only to him, not only that he had got, but that his ancestors had got before him. But when he had put these two into the proposition that the baboon was dangerous, it was applicable not only to the case in which the baboon was running after him, but also to the case in which he was attacking the keeper; and then we see what the action of the proposition is.—*Huxley.*

### CITY NOTES.

#### Professor Alexander J. Schen.

On Saturday May 21, this eminent scholar, holding the post of Assistant Superintendent of Schools in New York City, left this lower world. He was born in Westphalia in 1826. In 1843 he entered the university at Bonn, completing his course at Tubingen. In 1851 he came to this country and taught the modern languages at Mount Holly, N. J.; thence he went to Dickinson College, Pa., remaining several years. His contributions to the newspapers (for he seemed to have an inborn spirit of journalism) during all those years attracted the attention of the editors of Appleton's American Encyclopedia, and he was engaged as one of staff of editors employed on that publication; here he was employed for eleven years. During this time he edited several other publications, the "American Ecclesiastical Year Book" being one of them. When "Johnson's Encyclopedia" was projected in 1872, he was put at the head of the staff of writers. He was connected with Superintendent Kiddle, in the preparation of the "Cyclopedia of Education" in 1877, assisting to edit the "Theological Encyclopedia" of McClintock & Strong, and many other works of profound and varied knowledge. He prepared an exhaustive review of the "War in the East," giving a full history of the struggle between Turkey and Russia.

This is but a partial account of the heavy intellectual labors of Prof. Schen. But as one of the Superintendents of the schools of this city he is known to thousands of the boys and girls. By these he will be lamented, for he was a genial, noble-hearted man. He had genuine sympathy with a lad who was struggling to understand the simplest Latin roots; to make his path plain was a greater delight than to write for cyclopedias. Prof. Schen had a hearty sympathy with educational journals; he prized them; he knew that on them depended the progress of the educational cause; that they were the indicators of the educational temperature.

He leaves a widow and six children to mourn for him; and a wide circle of friends drawn about him by his pleasant smile and unaffected geniality, unite with them in mourning for him.

From the City Superintendent, announcing the death of Prof. Alexander Schen, late Assistant Superintendent, as follows:

CITY SUPERINTENDENT'S OFFICE,  
New York, June 1, 1881.

To the Honorable the Board of Education:  
GENTLEMEN—With deep sorrow I hereby announce to the Board the death of Assistant Superintendent Alexander J. Schen. He died after a short and sudden illness on the 21st of May.

Unassuming, kind and courteous, Prof. Schen was a scholar eminently qualified for the place which he so acceptably filled. By his death the Board has lost the services of a gentleman, whose ability was surpassed only by his desire to do his work well.

At a special meeting of the City Superintendent and his Assistants, the following preamble and resolutions were adopted:

Whereas, In the exercise of his supreme wisdom, it has pleased our Heavenly Father to remove from us, after a brief illness, our associate and friend, Alexander J. Schen, therefore be it

Resolved, That in the death of Assistant Superintendent Alexander J. Schen, the Department of Public Instruction of the City of New York has lost one whose ripe scholarship and great experience as a teacher admirably fitted him for the efficient discharge of the responsible duties of the position to which he was repeatedly chosen.

Resolved, That the greatness of this loss is enhanced by the enviable reputation our associate had gained for himself by the extended reading, close study and clear judgment that made him an authority in so many matters of interest to the learned and literary world.

Resolved, That we, his colleagues of the Superintendent's Department, hereby bear personal testimony to the unassuming manner, the kindly disposition, the helpful sympathy and the earnest faithfulness to study which characterized him, and by their cheering influence served to make lighter our official labors.

Resolved, That we deeply sympathize with his bereaved family, and hereby express our condolence with them in this, their great affliction.

JOHN JARPER, City Supt.

New York City.—The council of the New York University having decided to maintain the academic department we most respectfully suggest to all concerned that they should take some effective measures to put a stop to the annual announcement that this department is about to be closed. This annual gossip has a fountain-head somewhere in the hallowed precincts of the council and the stream should be dried up at its source. No college can thrive while it is semi-officially reported to be about to give up the ghost. We may add that so far as we can discover, this damaging gossip has had no cause except petulance originating in personal failure.—*Methodist.*

The Bermuda Isles form a group of more than 300 islands belonging to Great Britain in the N. Atlantic, 600 miles E. from the coast of South Carolina. Of the islands only five are of considerable size. The rest are mere islets or rocks. The plaiting of straw and the fibers of the palmetto leaf is carried on to some extent, and many persons are employed trading between Newfoundland and the West Indies. The islands are named from Bermudez, a Spaniard, the discoverer in 1552, and Sir George Somers, wrecked here in 1609. Hamilton, in Great Bermuda, is the present capital. Area about 20 square miles. Nearly half the population are white persons. Population, 12,509.

At no point can a good teacher work with more effect than in helping his pupils to good habits of speech, in teaching them the true meaning of words, and, above all, in leading them on by all arts to a gradual widening of their vocabulary. Every word thus gained is a new element in his power of thinking—a direct addition to the contents of his brain. Thought widens with vocabulary, and the number of words over which a mind holds sway, as it were, a measure of intellectual power. The brain expands by a knowledge of the things which the words indicate. The man that knows the most words, so as to use them correctly, each in its own place, is the man who has the most ideas to express, and most power to express them.

The papers read in associations must be discussed. The best text of a paper is its quickening influence in producing discussion. This is true when the subject is one that is appropriate. But papers are forced upon us that are wholly unfit. When a paper arouses no dissent and the time is short, there may be no general discussion. The proper committee can easily determine, early in the session, how much time can be given to discussion. Upon this they can report to the body and the body can make an order accordingly. Then if there be a presiding officer who knows his duty all will be well.

General Grant has been invited to take part in laying the corner-stone of the new Memorial Hall, of Union College. The ceremony will take place on June 21. The necessary funds have been procured by endowments from the friends of the college and ground has already been broken. The structure will be 200 feet long and 75 wide, including the Wa-hburne library, hall, lecture and recitation-rooms. It is said that General Grant has accepted the invitation, and also given the sum of \$1,000 towards the building fund.

### HORSFORD'S ACID PHOSPHATE

IN NERVOUSNESS, WAKELINESS, ETC.

DR. REUBEN A. VANCE, of New York Institute and Bellevue Hospital, says: "The preparation on which I place the most reliance is Horsford's Acid Phosphate."



## BOOK DEPARTMENT.

## NEW BOOKS.

Publishers will favor themselves and us by always giving prices of books.

**THE NEW TESTAMENT.** Revised Version. New York: I. K. Funk & Co.

We have received a copy of this edition of The New Testament which is authorized by the American Committee of Revision, Philip Schaff, president; George E. Day, secretary, vouching for same. It is not possible at this time to give an extended review of the changes and emendations that have been adopted, but judging from those that have already come before our notice, we cannot but think that the New Revision will meet with universal approval among Protestant ministers, teachers, and readers. Hundreds of thousands of these anxious readers of all denominations are now in possession of the "New Revision," and we shall soon have the popular verdict.

**COMPANION TO THE REVISED VERSION OF THE ENGLISH NEW TESTAMENT.** By Alexander Roberts, D.D. With Explanations of the Appendix by a Member of the American Committee.

The Companion is published by I. K. Funk & Co., as one of their Standard Series. Dr. Roberts is a member of the English Committee of Revision. We cannot do better than give the author's object as expressed in his preface. It is to explain to the English reader the general grounds of those many departures from the Authorized Version which he will find in the Revised Translation. Not one of these alterations has been made without what appeared to a majority of the revisers an adequate reason. They are to be traced to one or other of two causes—either to a change of the Greek text which it was found necessary to adopt, or to a change of translation which stricter fidelity to the original seemed to require. Under these two heads all explanations (so far as space permitted) will be found in the book.

This instructive and useful explanation by Dr. Roberts of the departures from the Authorized Version is silent about the American Appendix and the relation of the American Committee to the whole work. This defect is supplied by such additional information as can be published, without a breach of confidence, in the interest of both committees, which have so far worked harmoniously and successfully completed their joint task.

**PLOUGHED UNDER.** The story of an Indian chief, told by himself, with an introduction by Inshita Themba (Bright Eyes). Fords, Howard & Hulbert.

This book may be properly classed among those semi political novels in the publication of which Messrs. Fords, Howard & Hulbert won such a success. While the others have dealt with the social problem in the South, this one takes up the cause of the Indian in the West, and presents it from the standpoint of the red man himself with great clearness and considerable power. It is believed to be written by a certain clergyman in Omaha, and to have received a careful revision from Bright Eyes, so that the Indian phraseology and local coloring are presumably correct. The incidents which it presents, moreover, bear upon their face the marks of their genuineness and truth. Many of them, indeed, are already familiar through previous discussions of the Indian subject, only they are here presented in a dramatic form. Very many, no doubt, who have not been awakened to a sense of the Indian's wrongs through the reports of Congressional debates, or even the eloquent ap-

peals in his behalf that have been made through the newspapers, will be touched by this artless story of a single Indian's life.

**THE GEORGICS OF VIRGIL TRANSLATED INTO ENGLISH VERSE.** By Harriet Waters Preston. Boston: James R. Osgood & Co.

Miss Preston had proved her possession of admirable qualifications as a translator in her renderings of the Provencal verse, and she has expressed it by her attempt to turn the lines of Virgil into English. As a whole she has produced a faithful and poetic translation of that part of his work which the accomplished Roman considered the most perfect, and which for naturalness, grace and beauty of phrase has not been excelled from his time to ours. The charm of the original is retained.

**BRETON FOLK.** By Henry Blackburn. With illustrations by R. Caldecott. James R. Osgood & Co.

The pictures in this little volume constitute the principal charm. They are scattered through the pages in the most generous abundance, and the text is materially descriptive of the scenes which they represent. Mr. Caldecott has happily caught the salient points of the Breton peasantry, and each one of his clever sketches vividly reproduces a characteristic feature in their simple life.

**SCHOOL MANAGEMENT.**—This volume is by an educator who has had much experience, and who has given in this book many valuable hints to assist the teacher in the trying circumstances that surround him. He believes the way to manage a school is to render the pupils manageable. The book has an introduction by Thomas Hunter, President of the New York Normal College. It discusses the subject somewhat in the objective style—visiting a school and pointing out its excellent features. It shows how that good government increases the teaching power of the teacher. Shows the principles that underlie it, and makes valuable suggestions as to the mode by which regular attendance and the co-operation of the pupils can be secured. Discipline, penalties, modes of interesting and employing his pupils, are treated in an enlightened manner. The volume will be found useful.—*The Teacher.*

## MAGAZINES.

**THE Popular Science Monthly** for June has a racy series of articles on physical education by Dr. Oswald. There is a striking article by the versatile Sir John Lubbock, banker, statesman, archaeologist and naturalist, on the subject of "Fruits and Seeds." Under the title of "The Value of our Forests," N. H. Egleston treats of the evil effects of the extensive destruction of trees, with with particular reference to the state of things in the West. There is an elaborate and profusely illustrated paper by Alexander Graham Bell, describing his late discoveries on the "Production of Sound by Rodent Energy." But the most valuable as well as the longest paper in this number of the *Monthly* is that of Herbert Spencer on "Compound Political Heads" in his series on "The Development of Political Institutions." His great subject is the natural causes and early conditions which determine the forms of government.

The *North American Review* for June has an article by the Hon. Hugh McCulloch on "Our Future Fiscal Policy," treating of the problems of refunding, the remonetization of silver. George B. Loring writes of "The Patrician Element in American Society." Dorman B. Eaton makes a spirited defense of civil service reform; Prof. W. G. Sumner states very clearly the arguments for

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## Industrial Secrets.

A century ago what a man discovered in the arts he concealed. Workmen were put upon an oath never to reveal the process used by their employers. Doors were kept closed, artisans going out were searched, visitors were rigorously excluded from admission and false operations blinded the workmen themselves. The mysteries of every craft were hedged in by thick set fences of empirical pretensions and judicial affirmation. The royal manufactories of porcelain for example were carried on in Europe with a spirit of jealous exclusiveness. His Majesty of Saxony was especially circumspect. Not content with the oath of secrecy imposed upon his workpeople, he would not abate his kingly suspicion in favor of a brother monarch. Neither king nor king's delegate might enter the tabooed walls of Meissen. What is erroneously called the Dresden porcelain—that exquisite pottery of which the world has never seen its like—was produced for two hundred years by a process so secret that neither the bribery of princes nor the garrulity of the operatives revealed it. Other discoveries have been less successfully guarded, fortunately for the world. The manufacture of tinware in England originated in a stolen secret. Few readers need be informed that tinware is simply thin iron plated with tin by being dipped into the molten metal. In theory it is an easy matter to clean the surface of iron, dip it into a bath of boiling tin, remove it enveloped with a silvery metal to a place of cooling. In practice, however, the process is one of the most difficult in the arts. It was discovered in Holland and guarded from publicity with the utmost vigilance for more than half a century. England tried in vain to discover the secret until James Sherman, a Cornish miner, insinuated himself master of the secret and brought it home. The secret of manufacturing cast steel was also stealthily obtained and is now within the reach of all artisans.

**COOKING BY ELECTRICITY.**—Of the many curious things certain to be seen at the forthcoming exhibition of electricity at Paris, not the least remarkable will be the electrical cooking range of M. Salignac. That ingenious gentleman is going to fit up his apparatus in the grill room of the restaurant and intends to furnish a great variety of meats which have been cooked by heat generated from the electric current.

At the last Paris exhibition M. Mouchot roasted mutton in condensed sunshine and literally turned his spit on the hearth of the sun; but an enthusiastic admirer might say that M. Salignac had far surpassed this in broiling steaks by lightning and warming coffee with the aurora borealis. As a matter of fact the electric current is as well fitted to produce heat as it is to produce light, and just as electricity will in all probability be made to yield the principal artificial light of the future, so will doubtless it be applied to household heating. The same machines which light the house by night will heat and cook by day, besides performing other duties, such as driving a coffee mill or a sewing machine.—*Scientific American.*

free ships; Frederick Douglass writes of "The Color Line;" Desire Charnay, of "The Ruins of Central America;" Dr. Austin Flint discusses the benefits of vaccination; J. M. Mason asserts the lawful power of the government to regulate railway charges; and Prof. E. S. Morse sets forth the evidences of the existence of man upon this continent in prehistoric times.

The *Illustrated Scientific News* has again reached our editorial table. Under the management of its new publishers—Messrs. Munn & Co.—the *Illustrated Scientific News* has risen to the front rank of illustrated journals published in this country, and being issued at a very low price, it is within the reach of all who are interested in novelties, science, the useful arts and natural history.

The June number contains handsomely illustrated articles on the Chimpanzee and Gorilla, Ostrich Farming, New Fireless Locomotive, the Maxim Fire Boat, Perforating Machine, a new and novel Embroidering Frame, the new Electric Middlings Purifier, and a number of other handsome illustrations, besides a large number of interesting articles not accompanied by engravings.

Mr. Edwin A. Mead, of Boston, has written a small volume on "The Philosophy of Carlyle," which Houghton, Mifflin & Co. will have ready early in June. The author's purpose is to lead readers away from the din over the "Reminiscences" to a calm and just survey of Carlyle's powers as a thinker, and his methods of thought.

*Wide-Awake* for June is a strong number. Mrs. A. M. Diaz presents the ballad of "The Little Boggermuggers," which, with the quaint illustrations, fills six pages. Mr. Barnes gave a portrait of "Mother Goose." Among the poems are "Mary in the Morning Glories," by Mary Clemmer; "The Baby's Prayer," by Elizabeth Stuart Phelps; "Courtesy," by Mrs. L. C. Winston; and "Out of Tune," by Mrs. S. M. B. Piatt.

We have received the second and third numbers of the *New England Pictorial*, published monthly at Boston, by the Photo-Electric Publishing Co., \$1.00 per annum. This is distinctly a New England enterprise, and has met with a most flattering reception both by the press and the public, and promises to be a complete success. The engravings are all produced by the Mumler process of photo engraving, of which the publishers are the proprietors.

The Supreme Court of New York has granted the order to change the name of the corporation of "Scribner & Co. to 'The Century Co.'"—the order to take effect on the 21st of June. The July issues of *Scribner's Monthly* and *St. Nicholas* will have the new corporate imprint.

A LITTLE bit of a girl living near one of our cities ran into her mother from the roadside with some early spring blooms in her hands, and full of the outside glow, exclaimed: "O mamma, how nice it is to live where somebody doesn't own everything!"



**FEATHERS.**—The largest quill of a golden eagle weighs only sixty-five grains, and that seven such quills do not weigh more than a copper penny piece; the feathers of a common fowl, which weighs thirty-seven ounces, weigh only three ounces; the entire plumage of an owl weighs one ounce and a half. Some are for covering and some for strength; we shall find them, on examination, to be very differently put together.

There are some much stronger and stiffer than the wing quill feathers; those, for instance, forming the tails of the woodpecker tribe. And the reason is evident. Its food consists of grubs, usually concealed in the wood. In order to get them, he must therefore remain fixed on the bark, and make a hole with his beak, a tedious, if not impracticable operation, were it not for the wiry stiffness of the tail feathers, which press against a tree and act like an additional limb. The tail, however, has another use, applicable more or less to all birds; it is to them what a rudder is to a boat, and in many cases acts like a third wing. If we look at a hawk hovering in the air, when he remains in one spot we shall see that the tail is spread out like a fan, and it is in a constant state of quivering motion, balancing the bird, while the wings are keeping it aloft.

It is clear that if water could soak into the soft, feathery covering of a bird, every shower of rain would be the death of thousands, inasmuch as it would increase their weight considerably, and, at the same time, by destroying the fine elastic nature of their feathers, entirely disable them from flying, and they must remain in a helpless state upon the ground, either to perish from hunger or become the prey to men or animals, who would catch them without trouble. But against such a possibility they are guarded by an abundant oily covering, which is constantly renewed; so that the rain, instead of sinking, runs off, without remaining an instant.

**THE ELECTRICITY OF ATOMS.**—The most novel conclusion of Professor Helmholtz in his recent Faraday lecture is to the effect that the atom of every chemical element is always united with a definite unvarying quantity of electricity. This quantity stands in close connection with the combining power of the atom which modern chemistry has termed quantivalence. For if the amount of electricity belonging to the monad atom be taken as the unit then that of the dyad is two, that of the triad three and so on. "If," says Professor Helmholtz, "we conclude from the facts that every unit of affinity of every atom is charged always with one equivalent either of positive or of negative electricity, they can form compounds, being electrically neutral, only if every unit charged positively unite under the influence of a mighty electric attraction with another unit charged negatively. You will see that this ought to produce compounds in which every unit of affinity of every atom is connected with one—and only with one—other unit of another atom. This is indeed the modern chemical theory of quantivalence, comprising all the saturated compounds."

**A WHALE ATTACKS A SHIP.**—The bark Anna lately arrived in New York. The captain says that on Feb. 28, 3 p.m., he sighted a large whale over bows. "The fish bore down on us and struck ship on the port side of the stern and knocked the fore-port into matches and kindling wood.—Sounded pumps, but no leak; whale went off, leaving a track of blood behind." Capt. McPhail states that he was surprised at the whale dashing right into a large vessel in

mid-ocean. He says that when he first saw the big fish it was rolling and spouting water fifteen feet high. He had not then any idea it would charge his vessel, but soon discovered that the whale meant business. As the whale came on he luffed a little to prevent it from striking the side of the vessel and ripping a plank off. It dashed by and just gave one slap with its tail that fairly knocked the cut water of the boat off from the eleven inch mark to the keel. He thinks it was stunned and hurt.

**IMPERFECT EYES.**—Three years ago the Philadelphia Medical Society appointed a committee to investigate the condition of the eyes of the children in the city schools. The report of the committee was read by the chairman, Dr. Riale, at a recent meeting of the society. The committee had examined about 2,000 pairs of eyes. The condition of those examined, Dr. Riale said, had proved better than had been expected by the committee. The cases of impaired sight ranged from 25 per cent among the smaller children to 40 per cent among the older scholars. The average of diseased eyes ranged correspondingly from 30 to 60 per cent. The instances where any blame attached to the board of education or their sectional boards for want of care for the eyes of the children were only two, one of which was the case of the primary practicing class in the normal school. The room is lighted by one large western window, which owing to the position of the desks and the master's table, the children are obliged to face.

**MARK TWAIN'S RECIPE.**—To make this excellent breakfast dish, proceed as follows: Take a sufficiency of water and a sufficiency of flour, and construct a bullet-proof dough. Work this into the form of a disc, with the edges turned up some three-fourths of an inch. Toughen and kiln-dry in a couple of days in a mild and unvarying temperature. Construct cover for this redoubt in the same way, and of the same material. Fill with stewed dried apples; aggravate with cloves, lemon peel and slabs of citron; add two portions of New Orleans sugar; then solder on the lid, and set it in a safe place till it petrifies. Serve cold at breakfast, and invite your enemies.

A WITTY New York society woman was standing before Zola's greatly admired picture of Lot and his daughters, which was on exhibition in an art store on Fifth avenue. "Oh!" remarked a friend dolorously, "what do you suppose Lot thought when he beheld his poor wife turned to a pillar of salt?" "I suppose," replied our wit with admirable gravity, "he thought how he could get himself—a fresh one."

According to Josh Billings, "Pashence is a good thing for a man to have; but when he has got so much of it that he can fish all day over the side of a boat without any bait on his hook, laziness is what's the matter with him."

VIGILANT schoolma'am to small boy, actively observing the northeast corner of the school-room: "John, can you find nothing to study?" "Yes, ma'am, I've found it, and am thinking about it as hard as I can." General titter.

#### Be Sensible.

You have allowed your bowels to become habitually constive, your liver has become torpid, the same thing ails your kidneys, and you are just used up. Now be sensible, get a package of Kidney Wort, take it faithfully and soon you will forget you've got any such organs, for you will be a well man.—*Albany Argus.*

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A shoe is bought when it is soled,  
A man can see when out of sight.

**A Summer School of Natural Science.**  
The Boston Society of Natural History will open a seaside laboratory at Annisquam, Mass., June 15, the session to end September 15. There will be no stated course of instruction and no lectures, the purpose being to afford opportunities for the study and observation of the development, anatomy and habits of common types of marine animals under suitable direction and advice.

**SCHOOL MANAGEMENT.** By Amos M. Kellogg, A. M. 75 cents. (New York: E. L. Kellogg & Co.) Mr. Kellogg is a teacher of experience, and in this little book, in a simple and practical way, he gives hints for the guidance of the teacher which we are sure must prove valuable. Mr. Kellogg believes in making schools delightful for the pupils, and the teachers who take his principles as their guide must succeed.—*Illustrated Christian.*

FRANCE is greatly interested in a newly-discovered process of causing plants to flourish without soil. This was at first thought to be a grand scandal, but the floral exhibitions in Rouen have stopped the tongues of critics. The new King of the flowers bears the name of Dumesnil, and he presents to his visitors a richness of vegetation that dazzles and confounds. He has baskets loaded with anemones, primroses, violets, forget-me-nots and hyacinths, etc. And his "plants without earth" not only flourish, but they also bring forth flowers and buds, and the richest gardens do not excel his tables in beauty. Vast baskets filled with flowers, that seem as if they should weigh hundreds of pounds, can be lifted by the light hands of lady visitors, and the colors and general appearance of the plants indicate perfect health. The roots are simply hidden moss, and in this moss lies the secret. The question is again and again asked, What has the inventor done to give such magic power to the moss? And then to think of the possibilities of the future. Early plants may flourish all the winter; salons, libraries, and boudoirs may all revel in the flowers of the conservatory. The dining room may be a perpetual hot-bed, and banks of flowers may adorn every staircase, and border every hall.

An exchange describes a ballet-dancer's dress. The description, although short is about three inches longer than the dress.—*Norristown Herald.*

From the Hub.

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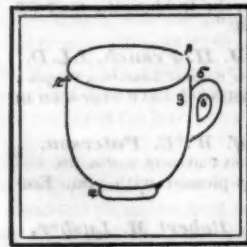
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